Environmental Due Diligence
for Purchase of
Silicon Metaltech, Inc.
at
Rock Island, Washington

November 1992

Prepared for:

(b) (6)

Prepared by:
Environmental Engineering & Consulting, Inc.
19125 Northcreek Parkway, Suite 111
Bothell, Washington 98011-8002
(206) 485-3437

Environmental
Engineering &
Consulting, Inc.

November 16, 1992

(b) (6)

Camas, Washington 98607

Dear Mr. (b) (6) :

As you and (b) (6) requested, Environmental Engineering & Consulting, Inc. (EEC) has undertaken an evaluation to address environmental issues, including those included in your November 9 letter as well as others I thought prudent for purposes of due diligence related to your planned purchase of the operating and tangible assets of Silicon Metaltech, Inc. (SMI) at Rock Island, Washington.

I have been familiar with this facility since 1988, but not for 15 years as your letter suggested.

Responses to the issues you raised and additional observations are as follow:

1.Underground Storage Tanks

There is presently one active underground storage tank (UST) at SMI. This 5,000 gallon tank is used for boiler fuel. This tank was "tightness" tested in 1988. Subsurface soil samples were also collected near the tank in 1988. Results of the "tightness" and soil sample tests indicated no apparent leakage from this tank. This tank is exempt from UST regulations since it is used for onsite heating fuel.

A 1,000 gallon gasoline UST was closed and removed in 1989 based on EEC recommendation that it was a potential liability. A closure report by EEC (dated January 24, 1990, copy enclosed) documents this closure and the absence of any apparent leakage from this tank. The 1988 "tightness" testing of this tank and soil sample tests also had indicated no apparent leakage from this tank, although a low level of petroleum in the soil was detected.

Another UST was closed prior to the 1988 audit. Subsurface soil samples were collected near this former UST in 1988 and no contaminants were detected.

C:\reports\229r.wr1

19125 Northcreek Parkway, Suite 111 Bothell, WA 98011-8002 206.485.3437 FAX 206.483.1058

2. Laboratory Dry Well

The cleanup of mercury contamination found at the laboratory dry well has not been completed. It is our understanding that prior owner(s) are currently preparing to correct this, but we have not been advised of the details of this planned remediation, so it would not be possible to offer an opinion as to its suitability.

SMI has been listed as a contaminated site in the Washington Department of Ecology (WDOE) Affected Media and Contaminants (AMC) report. This listing is believed to be due primarily to the mercury contamination at the former laboratory. SMI has been scored using the Washington ranking model. The site remains a category C1 (confirmed hazardous substance site, a relatively high ranking) according to the most recent AMC report, dated October 9, 1992. It had been understood earlier that the site's ranking had been lowered from a 4 to a 5, although this is not reflected in the AMC reports.

Onsite disposal of fume waste in unlined ponds and in piles may have contributed to the C1 ranking.

It is recommended the State's ranking be reviewed. An addendum to this report will be prepared on results of this review.

3. Waste Oil Disposal

The contaminated area resulting from past waste oil disposal to the north and east of the maintenance shops has not been corrected nor has it been investigated further to define the extent and probable corrective action costs. Corrective action for this contaminated area was estimated in 1988 at about $50,000, but these costs were not reviewed again. It is our understanding that corrective action for this matter was not undertaken by SMI due to the Hanna indemnity.

This waste oil has been sent to offsite waste oil processors since 1988 as recommended by EEC. This should have eliminated the major source of waste oil contamination.

Steam cleaning of oily parts could also be a source of waste oil contamination in soils at SMI. This can be corrected with a proper collection at minimal cost.

4. PCBs

No remedial actions have been taken related to the PCBs to our knowledge. It is possible no cleanup would be needed. Corrective action for this contaminated area was estimated in 1988 at about $18,000, but these costs were not reviewed again.

5. Fume Hazardous Waste Determination

Fume waste was tested further in 1991 as provided in our letter report to SMI of April 17, 1991, a copy of which is enclosed. New fume samples were tested via the TCLP test method that had replaced the EP Toxicity method for hazardous wastes. This testing by the new method confirmed our prior assessment that the fume was not a hazardous waste. The possibility that lead contamination in the fume would cause the fume to be a classified as a hazardous waste was reduced since the results for lead in the recent TCLP tests were substantially less than the 1988 EP Toxicity tests. The fume continues not to be a "listed waste," according to our review of federal regulations (40 CFR 261.31–.32) and telephone conversations this week with EPA regarding any recently listed waste.

Onsite disposal of fume waste in unlined ponds and in piles may have contributed to the C1 ranking in the WDOE AMC list, as noted above. The TCLP and EP Toxicity analytical data discussed above and other data on fume would not suggest that onsite disposal of fume waste as currently practiced would be a threat to ground water.

6. Effluent Discharge

No adverse issues have been raised about SMI's effluent discharge by WDOE or others to our knowledge. An NPDES discharge permit renewal application was filed with WDOE in 1991. A storm water permit application was also filed at that time. A copy of these permit applications are enclosed.

Recent data on effluent contaminants were provided with these applications. There has been no comment or response from WDOE to our knowledge. The NPDES discharge permit has not yet been renewed. It is common for permit renewals to lag applications by two years or more. Until renewal, the former NPDES permit remains in effect. If WDOE has concerns about the effluent discharge, it is considered most likely that more monitoring would be required at minimal additional expense.

An annual permit fee of $7,666 was charged for effluent discharges for the period July 1992 through June 1993.

7. Ground Water Quality

Subsequent to the December 5, 1988 SMI post–audit site characterization report, the City of Rock Island had several wells tested in 1989. This testing was reportedly due to concern over the nearby Douglas County landfill and a proposal to dispose of sewage sludge near the airport. The uncertified laboratory which performed the testing reported elevated levels of mercury, lead, arsenic, chromium and selenium, with most being above drinking water standards. The Washington Department of Social and Health Services (DSHS) followed up by testing these wells again (as were many other wells) using a state lab and certified private labs. These later results were found not to be elevated and less than drinking water standards. A copy of the DSHS report on this matter is enclosed.

Ground water quality standards were adopted by WDOE about two years ago. Shortly thereafter, in early 1991 WDOE met with SMI and EEC. WDOE initially expressed concern that onsite fume disposal could be a problem and prior Hanna or WDOE ground water monitoring at the site may have indicated ground water contamination. To help resolve this issue, all relevant data (1988 to present) were provided to WDOE shortly after the meeting. No subsequent actions are known to have been taken by WDOE that would indicate a continuing concern on their part. It is possible that some of these data were used in the WDOE AMC report ranking noted in item 10. The WDOE hydrogeologist involved in the early 1991 meeting was queried during this work about the status of this issue. During this conversation he indicated he had been moved to other, higher priority projects. His recollection was unclear, but he may not have been convinced in early 1991 that ground water monitoring at SMI was not necessary to address fume disposal, the mercury contamination and compliance with ground water standards.

If ground water monitoring were required to address fume disposal and compliance with ground water standards, this could be accomplished for about $50,000 or less.

8. SARA 313

We have been advised by EPA Region 10 that the non-fibrous forms of aluminum oxide were delisted from the SARA 313 hazardous chemical list (40 CFR 372) on February 14, 1990. Accordingly, it can probably be assumed that aluminum oxide at SMI is not reportable under 313.

As far as we know, SMI did not make a study fugitive emission study such as was suggested in the December 1988 report. However the 1990 and 1991 annual emission inventories prepared by EEC might be considered to be such studies but these inventories did not specifically address 313.

9. Furnace Waste Hazardous Waste Determination

Tests in late 1988 determined that the "hard pan" and "carbon block" were not classified as hazardous wastes according to the EP Toxicity method. These tests (also for most priority pollutants, including cyanide) found no other contaminants at levels of concern.

A copy of the EEC May 2, 1991 letter report discussing this information is enclosed.

10. Solid Waste Disposal

State regulations (WAC 173-304) require SMI to apply for and obtain a solid waste disposal permit for onsite disposal of fume waste, hard pan, carbon block and other wastes from the local health district. As noted in items 5 and 9 above, these wastes have been tested extensively and there was no evidence of contaminants at levels of concern. These wastes would be considered "inert waste" under the regulations, which minimizes solid waste disposal operational requirements. If and when the health district demand such a permit be obtained, additional cost would be incurred to prepare the application and possibly to modify waste handling and disposal procedures. Ground water monitoring may also be necessary as noted in item 7 above.

11.Air Pollution Control

Observations about air pollution issues are as follows.

a.1990 Clean Air Act Amendments/NESHAP (National Emission Standards for Hazardous Air Pollutants)

EEC recently prepared a response for SMI to the EPA Ferroalloy NESHAP Information Collection Request, a copy of which is attached. As indicated in this document, emissions of antimony (Sb) compounds, arsenic (As) compounds, cadmium (Cd) compounds, chromium (Cr) compounds, cobalt (Co) compounds, cyanide (CN) compounds, lead (Pb) compounds, mercury (Hg) compounds, nickel (Ni) compounds, selenium (Se) compounds and polycyclic organic matter (POM) were reported to EPA. It is understood EPA will use this information along with similar information from other sources to develop maximum achievable control technology (MACT) standards. It is unknown whether the eventual MACT standards will affect SMI. It can be expected to require one to several years for emission standards to be adopted for the ferroalloy industry as a result of this information collection effort by EPA.

b. Permit fees

Permit fees may be expected to increase in the future. Presently SMI is charged $10/ton annually. Estimated emissions for 1991 were 1,745.9 tons per year, resulting in a fee of about $17,459. A copy of the 1991 emission inventory prepared by EEC is attached for reference.

It is understood from discussions with a person on a WDOE permit fee advisory committee that a proposal will be sent to the Legislature that could increase SMI air permit fees to the range of $40,000 to $53,000 per year. Apparently WDOE intends to fund its air program through such fees as it has other programs.

The permit fees, even at current levels, may provide an incentive to fine tune the annual emission inventory and perhaps implement better controls.

c. WDOE Air Toxics

WDOE has adopted air toxics regulations to control emissions of some 500 pollutants from new and modified sources. These regulations do not appear to apply to SMI, provided SMI does not make a modification under definition of "new toxic air pollution source", see attached regulations, and pamphlet. As long as SMI does not make an "alteration..which may increase emissions or increase ambient air concentrations of any regulated air pollutant.." these regulations would not apply.

d.Related Air issues

WDOE may require some emissions at SMI to be better controlled, e.g., uncontrolled tapping emissions and fugitive (i.e., uncaptured emissions) furnace emissions.

Particulate matter smaller than 10 microns (PM10) may require better controls in the future; the principal means of control for PM10 would be the two large baghouses.

These considerations probably necessitate better air pollution controls at SMI in the future.

Please do not hesitate to call me if there are any questions.

Sincerely,

Patrick H. Wicks, PE, CHMM
President

Enclosures

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UST closure report, January 24, 1990

C:\reports\229r.wr1

UNDERGROUND TANK CLOSURE
SILICON METALTECH, INC.
ROCK ISLAND, WASHINGTON

January 24, 1990

UNDERGROUND TANK CLOSURE
SILICON METALTECH, INC.
ROCK ISLAND, WASHINGTON

January 24, 1990

Patrick H. Wicks, PE, CHMM
President

Roger Wilson
Geologist

Prepared for:

Silicon Metaltech, Inc.
Seattle, Washington

Prepared by:
Environmental Engineering & Consulting, Inc.
19125 Northcreek Parkway, Suite 111
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(206) 485-3437

TABLE OF CONTENTS

1 PROJECT DESCRIPTION AND SCOPE OF WORK 1

2 METHODS OF INVESTIGATION 2
- 2.1 Tank Removal Documentation 2
- 2.2 Sample Collection 2
- 2.3 Analytical Methods 3

3 RESULTS OF INVESTIGATION 4
- 3.1 UST Inspection 4
- 3.2 Subsurface Conditions 4
- 3.3 Ground Water 4
- 3.4 Analytical Results 4
- 3.5 Tank Cleaning and Disposal 5
- 3.6 Backfilling of Excavation 5

4 CONCLUSIONS 6

TABLES & FIGURES

Table 1. Sample Results for Petroleum Hydrocarbons

Figure 1. Site Location Map - SMI Rock Island, WA

Figure 2. Sample Locations - SMI Tank Removal

APPENDIX

Laboratory Results

Chain-of-Custody

Photographs

Tank Cleaning Certificate

1 PROJECT DESCRIPTION AND SCOPE OF WORK

Environmental Engineering and Consulting, Inc. (EEC) was retained by Silicon Metaltech, Inc. (SMI), to document the closure by removal of an underground storage tank (UST) located at the facility in Rock Island, Washington. The scope of the project included:

(a) monitoring and documenting the removal of an approximately 1,000 gallon unleaded gasoline UST,

(b) collecting soil samples from the tank excavation, and from soil stockpiled around the perimeter of the excavation,

(c) laboratory analysis of soil samples for total petroleum hydrocarbons (TPH), and volatile aromatic hydrocarbon compounds principally benzene, toluene, ethyl benzene and xylene (BTEX), and

(d) preparation of this report.

The location of the SMI plant at Rock Island is shown on Figure 1. The location of the UST within the plant is also shown on the figure.

2 METHODS OF INVESTIGATION

2.1 Tank Removal Documentation

The 1,000 gallon unleaded gasoline UST to be removed was located south of the change building at the SMI facility. The removal was completed on November 27, 1989, by SMI personnel using a backhoe and rubber tired front end loader under the direction of a representative from B&C Equipment Company (B&C) Seattle, Washington. Figure 2 shows the approximate location of the UST excavation. SMI had removed as much gasoline as possible before removal.

Prior to removal approximately 50 pounds of dry ice was placed into the UST by a representative of B&C to displaced potentially explosive vapors. This minimized explosion and fire hazards during removal.

The UST removal was observed by Chief Coombs of Douglas County Fire Protection District 2, in accordance with his request (EEC had notified the District in the event a permit for the removal was needed, but no permit was required). The tank and tank excavation was inspected and photographed by an EEC field representative.

The removed tank was loaded onto a B&C company truck and reportedly driven to Northwest EnviroService, Inc. in Seattle, Washington for cleaning and disposal.

2.2 Sample Collection

Soil samples were collected from the bottom and walls of the tank excavation, and stockpiled excavated soil. Sample S-1 and S-3 were collected from the west and east walls of the excavation, respectively. These samples consisted of soil collected at four locations from each wall at depths of 4.5 and 8 feet below grade. Samples S-2 and S-4 were collected from the north and south walls of the excavation, respectively. These samples consisted of soil collected at six locations from each wall at depths of 4.5 and 8 feet below grade. Sample S-5 was collected at five locations from the bottom of the excavation at a depth of 8 feet below grade. Samples S-6 and S-7 were collected from excavated soil stockpiled to the south and west of the excavation. Soil samples were screened with an HNu photoionization detection instrument upon removal from the excavation and stock piled soil.

The composite soil samples were collected with a stainless steel spoon and bowl and consisted of scraping equal amounts of soil from each location in to the stainless steel bowl. The soil in the bowl was mixed thoroughly and transferred into sterilized

glassware with Teflon sealed lids provided by the project laboratory. The composite samples were stored on site and transported to the laboratory in an ice chest chilled to 4 degrees Celsius to minimize dissipation of volatile hydrocarbons. EPA recommended protocols for sample management, including maintenance of chain-of-custody documents, were followed at each stage of the project.

2.3 Analytical Methods

AmTest, Inc. was chosen to perform the laboratory analysis on the soil samples. Soil samples were analyzed for TPH (nC-1 to nC-22) by EPA Method 8015 (Modified). Soil samples were also analyzed for BTEX by EPA Method 8020.

Sample S-1 and S-2, S-3 and S-4, and S-6 and S-7 were composited by the laboratory prior to analysis.

3 RESULTS OF INVESTIGATION

3.1 UST Inspection

Inspection of the UST upon removal revealed moderate corrosion on the exterior surfaces. No obvious holes or evidence of leakage was observed. After removal, the UST was reportedly transported to Northwest EnviroService, Inc. for cleaning and disposal.

3.2 Subsurface Conditions

Soils logged from the walls of the tank excavation were comprised of fill material and consisted of medium to very coarse grained sand with an occasional cobble and boulder up to one foot in diameter. Asphalt chunks were observed in the fill down to a depth of four and one-half feet below grade. Thin discontinuous layers of black sooty material was noted throughout the walls of the excavation. No hydrocarbon odors were noticed in the excavated material or soil samples. The results of the HNu screening of soil samples are presented below in parts per million (ppm):

Sample	Concentration (ppm)
S-1	<5
S-2	<5
S-3	<5
S-4	<5
S-5	<5
S-6	<5
S-7	<5

3.3 Ground Water

No ground water was encountered during the tank removal. According to a well log for SMI well number three, the depth to ground is roughly 30 feet below grade.

3.4 Analytical Results

The results of laboratory tests performed on selected soil samples are presented in Table 1. A review of the results in Table 1 reveal that all the composite soil samples had no detectable concentrations of BTEX, gasoline, diesel #1 and diesel #2.

3.5 Tank Cleaning and Disposal

The tank was cleaned and disposed of in accordance with all federal, state, and local rules and regulations as reflected in the December 8, 1989 certificate by Northwest EnviroService, Inc.

3.6 Backfilling of Excavation

On December 14, 1989, EEC advised SMI that the laboratory results indicated no hydrocarbon contamination. SMI advised that it backfilled the excavation on December 15, 1989 with soil/fill from the tank removal and clean fill from elsewhere on the plant site.

4 CONCLUSIONS

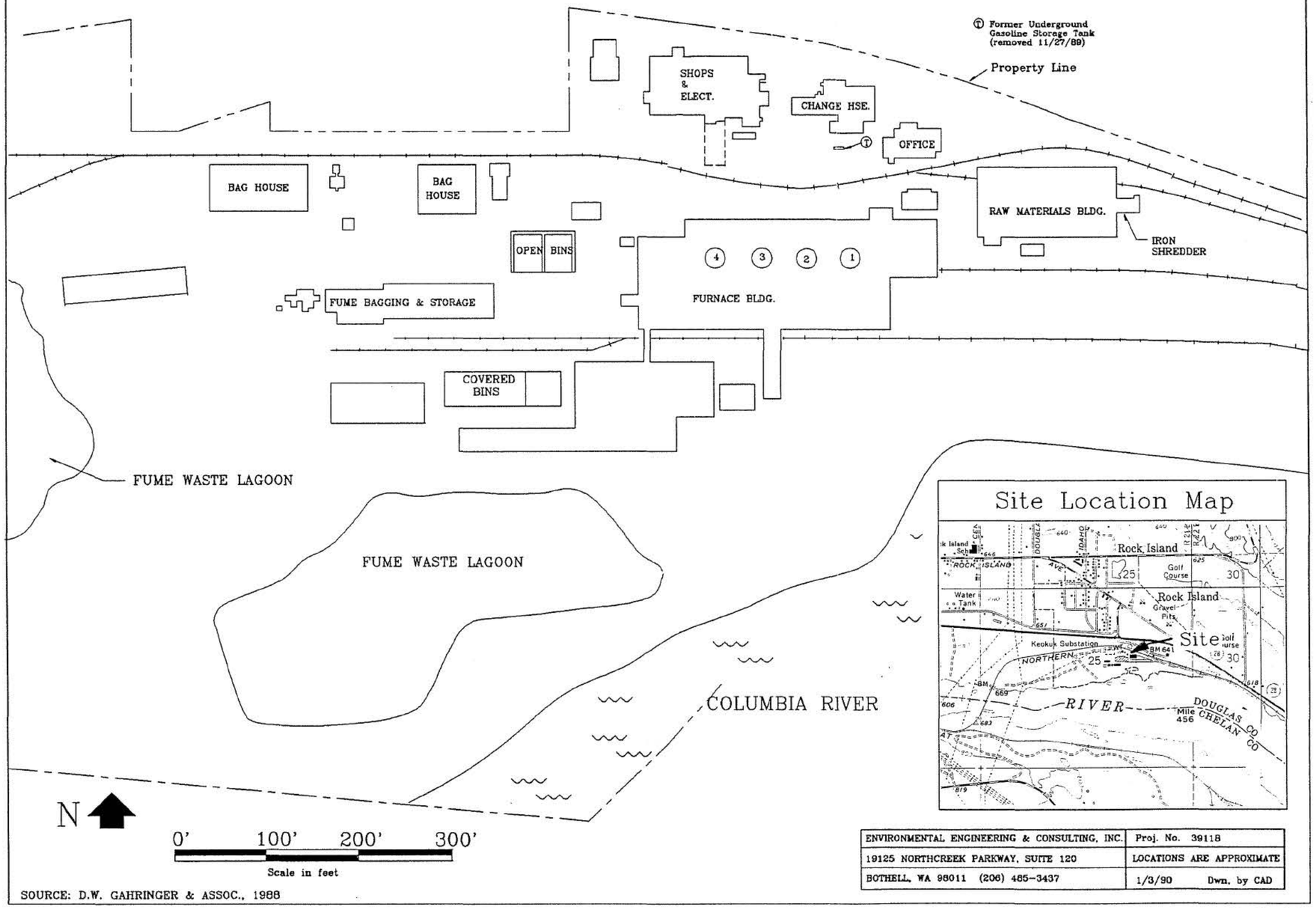
Our interpretation of appropriate guidelines for allowable concentration levels are based on the Washington Department of Ecology (WDOE) 8/1/88 draft document "Policies and Procedures for Underground Storage Tank Removal." In that document the WDOE has established recommended cleanup level goals for petroleum hydrocarbons. These cleanup level goals are listed in Table 1.

An inspection of the tank revealed moderate corrosion over the exterior surfaces of the tank, but no obvious evidence of leaks or holes were visible.

Based on information developed through observation of the UST removal, field screening with a photoionization instrument, soil sampling, laboratory analysis, and WDOE cleanup guidelines, it appears that soil, in the vicinity of the tank excavation is not contaminated by residual petroleum hydrocarbons, or BTEX that would warrant cleanup or remediation.

This report should satisfy EPA regulations (40 CFR, Part 280) for closure of petroleum USTs.

Figure 1
Site Location Map & Site Plan
Silicon Metaltech, Inc.
Rock Island, Washington



SOURCE: D.W. GAHRINGER & ASSOC., 1988

ENVIRONMENTAL ENGINEERING & CONSULTING, INC.	Proj. No. 39118
19125 NORTHCREEK PARKWAY, SUITE 120	LOCATIONS ARE APPROXIMATE
BOTHELL, WA 98011 (206) 485-3437	1/3/90 Dwn. by CAD

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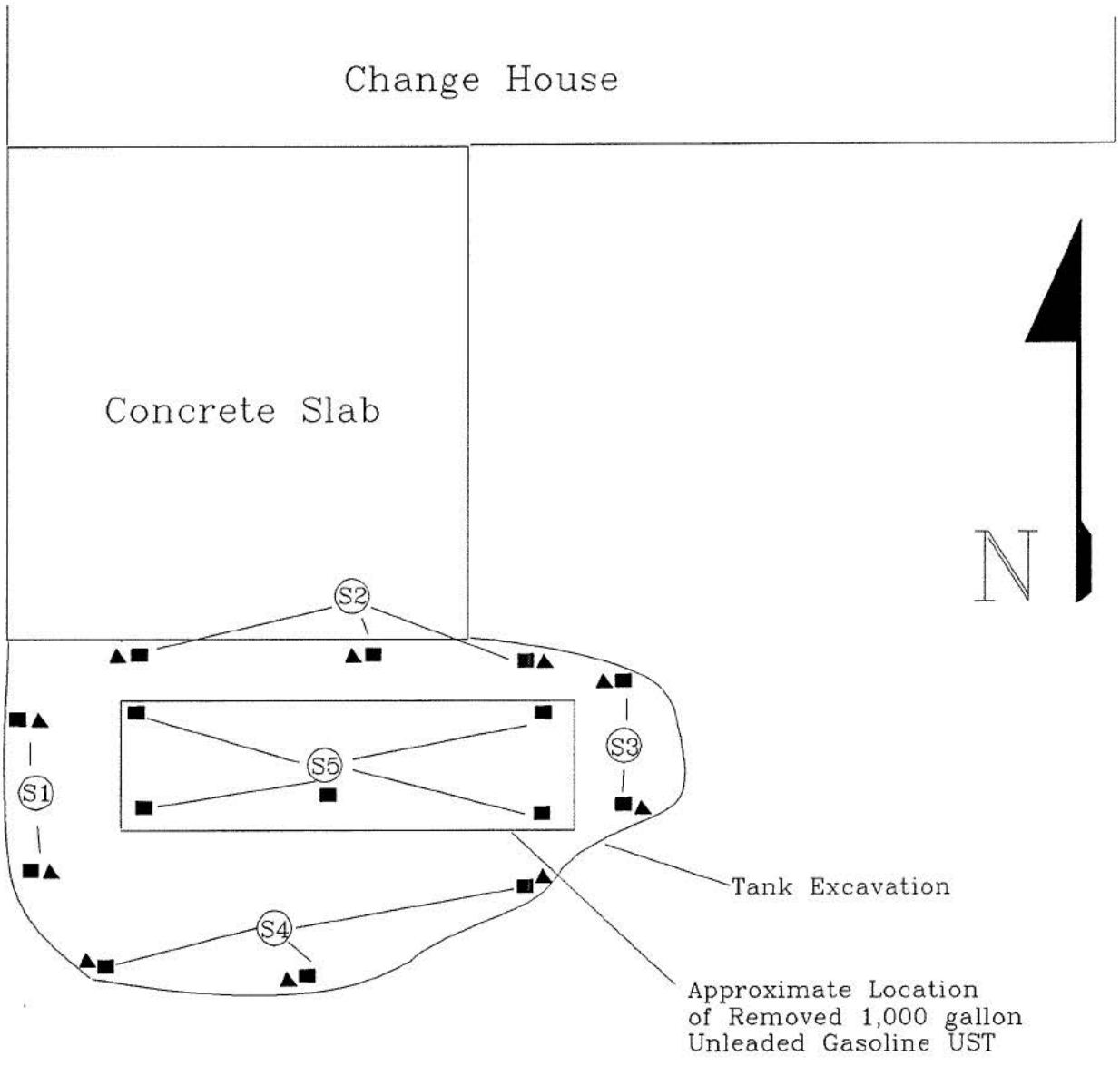
Figure 2. Sample Locations
SMI Tank Removal



Legend	
(S1)	Composite Soil Sample Number
■	Soil Sample Collected at 8 Feet Below Grade
▲	Soil Sample Collected at 4.5 Feet Below Grade

0 5'
Scale

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ENVIRONMENTAL ENGINEERING & CONSULTING, INC.	Proj. No. 39118
19125 NORTHCREEK PARKWAY, SUITE 120	LOCATIONS ARE APPROXIMATE
BOTHELL, WA 98011 (206) 485-3437	12/15/89 Dwn. by CAD

TABLE 1

Sample Testing Results for Volatile Aromatic Hydrocarbons, Petroleum Hydrocarbons, and Field Screening mg/kg (ppm)

Sample Number	S-1,2	S-3,4	S-5	S-6,7	WDOE Soil Cleanup Guidelines (1)
Method 8020 Results					
Benzene	<0.005	<0.005	<0.005	<0.005	0.66
Toluene	<0.005	<0.005	<0.005	<0.005	143
Ethylbenzene	<0.005	<0.005	<0.005	<0.005	14
Total Xylenes	<0.005	<0.005	<0.005	<0.005	NA
Method 8015M Results					
TPH					200
Gasoline	<20	<20	<20	<20	
Diesel #1	<25	<25	<25	<25	
Diesel #2	<40	<40	<40	<40	
HNu screening levels, ppm	NR	NR	NR	NR	NA

TPH - Total Petroleum Hydrocarbons
NR - No Response = <5ppm
NA - Not Applicable
(1) WDOE, 1988, Policies and Procedures for Underground Tank Removal (Draft)

APPENDIX

AMTEST

AmTest Inc.

Professional
Analytical
Services

14603 N.E. 87th St.
Redmond, WA
98052

Fax: 206 883 3495

Tel: 206 885 1664

ANALYSIS REPORT

CLIENT: Environmental Engineers

REPORT TO: Roger Wilson
19125 North Creek Parkway, Suite 111
Bothell, WA 98011-8002

DATE RECEIVED: 11/29/89
DATE ANALYZED: 12/4/89
DATE REPORTED: 12/5/89

ANALYSIS OF FUELS IN SOIL BY EPA 8015 (MODIFIED)

Laboratory Sample Nos.	Client Identification	Gasoline (mg/kg)	Diesel #1 (mg/kg)	Diesel #2 (mg/kg)
921945	S-1 + S-2	ND	ND	ND
921946	S-3 + S-4	ND	ND	ND
921947	S-6 + S-7	ND	ND	ND
921948	S-5	ND	ND	ND
921948	S-5 Spike F* (%)	-	106.	-
921948	S-5 Spike G* (%)	-	102.	-
BLANK		ND	ND	ND
DETECTION LIMIT		20.	25.	40.

*Spike Recovery Data - reported in percent (%).

ND = Not Detected.

PW 30003368

CLIENT: Environmental Engineers

REPORT TO: Roger Wilson

DATE RECEIVED: 11/29/89
DATE ANALYZED: 12/4/89
DATE REPORTED: 12/5/89

GC ANALYSIS OF PURGEABLE AROMATIC COMPOUNDS IN SOIL BY EPA 8020

Laboratory Sample Nos.	921945	921946	921947	DETECTION LIMIT
Client Identification	S-1 + S-2	S-3 + S-4	S-6 + S-7	(ug/kg)
Benzene	ND	ND	ND	5.
Toluene	ND	ND	ND	5.
Chlorobenzene	ND	ND	ND	5.
Ethylbenzene	ND	ND	ND	5.
m+p-Xylene	ND	ND	ND	5.
o-Xylene	ND	ND	ND	5.
1,3-Dichlorobenzene	ND	ND	ND	5.
1,4-Dichlorobenzene	ND	ND	ND	5.
1,2-Dichlorobenzene	ND	ND	ND	5.

m-Xylene & p-Xylene coelute.
ND = Not Detected.
All results are reported in ug/kg.

Internal Surrogate (%)

Bromofluorobenzene	97.	85.	66.	-

AMTEST

CLIENT: Environmental Engineers

REPORT TO: Roger Wilson

DATE RECEIVED: 11/29/89
DATE ANALYZED: 12/4/89
DATE REPORTED: 12/5/89

GC ANALYSIS OF PURGEABLE AROMATIC COMPOUNDS IN SOIL BY EPA 8020

Laboratory Sample Nos.	921948	DETECTION LIMIT
Client Identification	S-5	(ug/kg)
Benzene	ND	5.
Toluene	ND	5.
Chlorobenzene	ND	5.
Ethylbenzene	ND	5.
m+p-Xylene	ND	5.
o-Xylene	ND	5.
1,3-Dichlorobenzene	ND	5.
1,4-Dichlorobenzene	ND	5.
1,2-Dichlorobenzene	ND	5.

m-Xylene & p-Xylene coelute.
ND = Not Detected.
All results are reported in ug/kg.

Internal Surrogate (%)

Bromofluorobenzene	70.	-

JJMcA/pb

REPORTED BY James J. McAteer, Jr.

AMTEST

Al[illegible] Inc.
Professional
Analytical
Services

[illegible]03 N. [illegible] St. [illegible]06 88
Redmond, WA
98052
Tel: 206 885 1664

CHAIN OF CUSTODY RECORD

PROJ. NO.	PROJECT NAME
39118	SMI TANK Removal

SAMPLERS: (Signature)

Roger a. Wilson

Client Name: ENVIRONMENTAL [illegible] + CONSULTANT INC

Client Address: 19125 Northcreek Parkway

Client Phone: 485-2437

Contact Person: ROGER WILSON

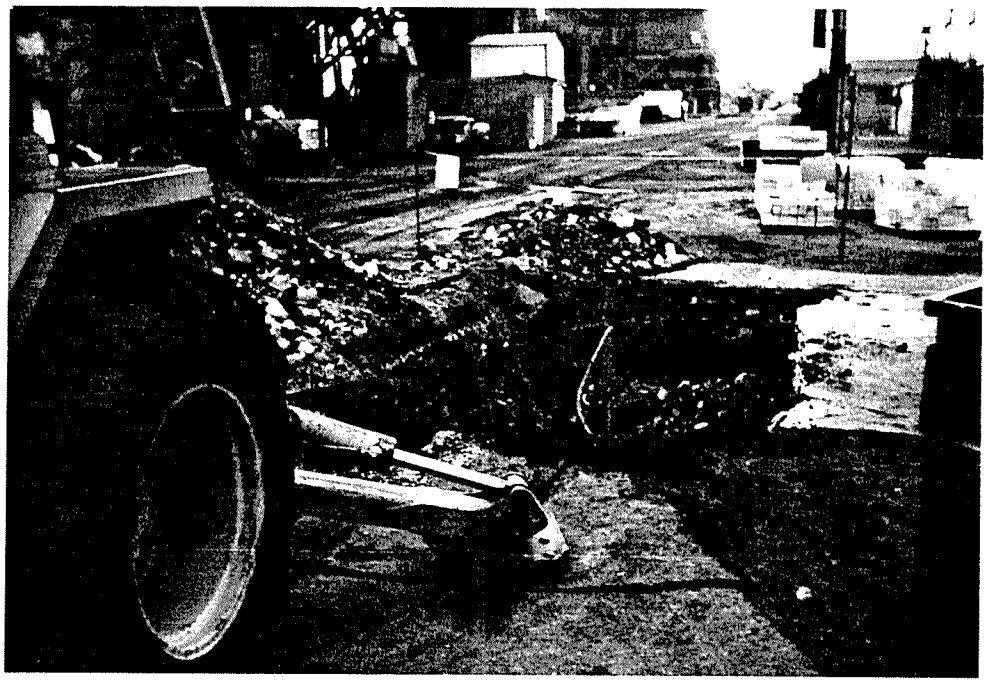
P.O. No.:

STA. NO.	DATE	TIME	COMP.	GRAB	STATION LOCATION	NO. OF CONTAINERS
	11-27	3:10	X		S-1	2
	11-27	3:10	X		S-2	2
	11-27	3:30	X		S-3	2
	11-27	3:40	X		S-4	2
	11-27	3:45	X		S-5	2
	11-27	4:15	X		S-6	2
	11-27	4:20	X		S-7	1

WILL FAX INSTRUCTIONS RAW 11-26-89

Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Roger a. Wilson	11-28-89 2:10 PM				
Relinquished by: (Signature)	Date/Time	Received by: (Signature)	Relinquished by: (Signature)	Date/Time	Received by: (Signature)
Relinquished by: (Signature)	Date/Time	Received for Laboratory by: (Signature)	Date/Time	Remarks	
		Robin M Keay	11/28/89 2:11 PM		

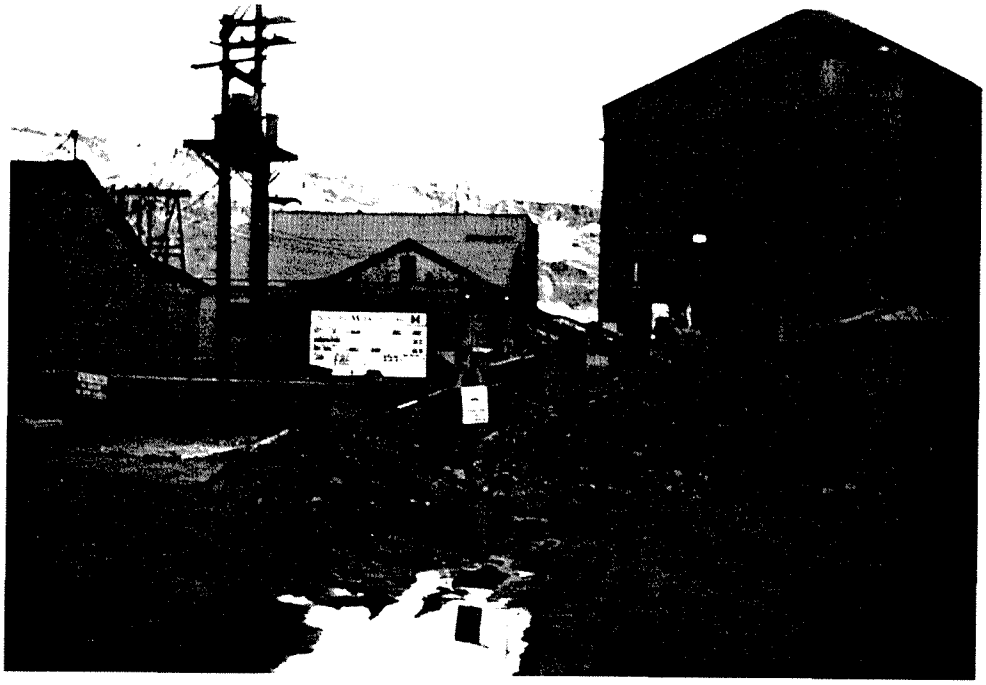
PM 30003371



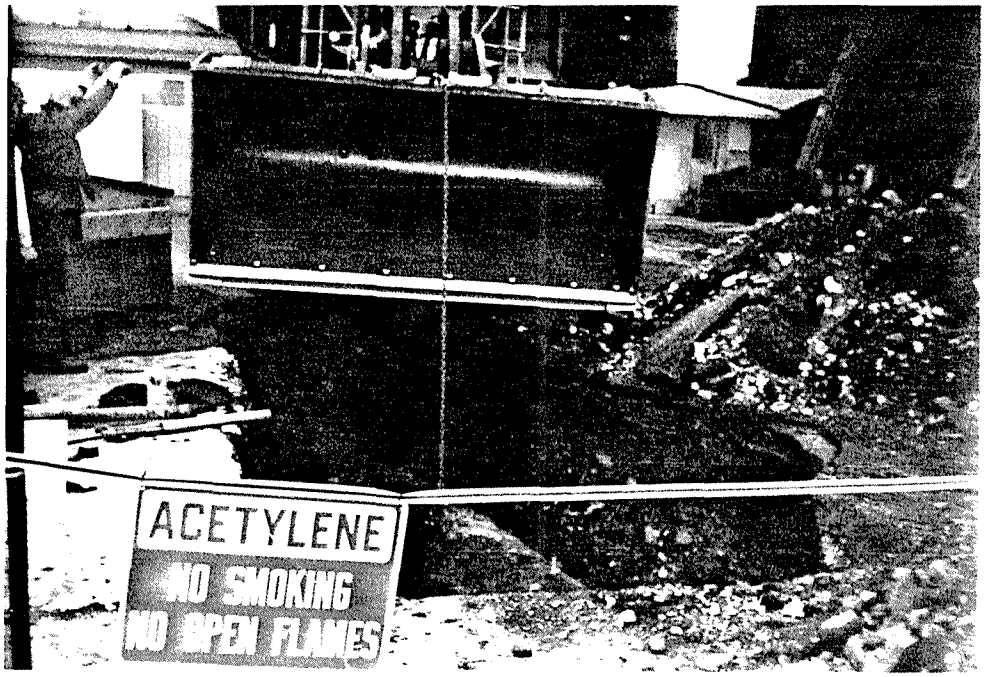
Photograph 1 - Looking west at tank excavation prior to tank removal.
11/27/89

Photograph 2- View looking at tank excavation prior to tank removal
11/27/89

Photograph 3 - View showing B & C Equipmment Co. personnel
11/27/89 preparing tank for removal.



Photograph 4 - View showing removed soil stckpiled south and
11/27/89 west of excavation.



Photograph 5 - Rubber tire loader removing tank.
11/27/89

Photograph 6 - View showing removed tank.
11/27/89

Northwest EnviroService Inc.

DISPOSAL CERTIFICATION

DATE: December 8, 1989

TO: B & C Equipment
19009 - 16 Avenue South
Seattle, WA 98188

REFERENCE P.O. #n/a

Dear Sir,

This letter is to certify that Northwest EnviroService, Inc. has received the following tank(s) for cleaning and disposal in accordance with all federal, state and local rules and regulations:

1.) One (1) 1,000 gallon gas

NWES JOB #: 32-11925

DATE RECEIVED: 11-27-89

DATE CLEANED: 12-07-89

DATE OF DISPOSAL: 12-07-89

LOCATION OF TANK ORIGIN: Eastern Washington

If you have any questions or requests for service, feel free to contact this office at (206)-762-1190.

Thank you for your business and we look forward to being of service in the future.

Sincerely,

Northwest EnviroService, Inc.

Thomas R. Gremel

Thomas R. Gremel
Underground Tank Division Manager

TRG:cal

RECEIVED
DEC 11 1989

PW 30003375

P.O. Box 24443 • Seattle, WA 98124 • 1700 Airport Way South • Seattle, WA 98134 • Phone 206-622-1090 / Toll-Free 1-800-735-7069

April 17, 1991 letter report to SMI on TCLP testing results

C:\reports\229r.wr1

Environmental
Engineering &
Consulting, Inc.

April 17, 1991

Mr. Jim Trunzo
Executive Vice President
Silicon Metaltech, Inc.
100 4th Street
Rock Island, Washington 98850

Dear Jim:

Results of lab testing of fume waste via the TCLP method were recently received. I have attached a copy of revised Table C from the recent excerpts report to which these data have been added. The data has been graphed also for comparison with the prior EP Toxicity data and with the regulatory limits, see attached.

The results show no samples exceed the TCLP regulatory limits. We did not test for eleven volatile organics nor eight pesticides because it would be so improbable that these could be present, considering the source of the fume and the high temperatures to which it is exposed.

The 1991 TCLP lead results were substantially lower than the previous EP Tox results, which allayed what could have been a major concern. Generally other elements/metals in the 1991 sample results were similar to or lower than the 1988 EP Tox results. None of the semivolatile organics were detected above the method reporting limit. Enclosed also is a copy of the lab report.

It is recommended these results be forwarded to the WDOE along with other data not provided in the excerpts report. Please do not hesitate to call me if there are any questions.

Sincerely,

Pat

Patrick H. Wicks, PE, CHMM
President

Enclosures

cc: Robert L. Miller

PW 30001168

19125 Northcreek Parkway, Suite 111 Bothell, WA 98011-8002 206.485.3437 FAX 206.483.1058

TABLE C (updated)
FUME WASTE ANALYTIC DATA SUMMARY
Constituent Concentration, parts per million (ppm, mg/l, mg/kg)

Sample Location	NWFL (1)	FWL (2)	FWL	FWDA (3)	FWDA	FWDA	FWL	FWL	Fume (4)	Fume (4)			Pond 1,2,8	Pond 4	Pond 6	Pond 4	
Sample Identification	SMTFU-9	Composite SMTFU-8&10	Composite MTFU-11&12	Composite SMTFU-6&7	Comp: SMTFU-2&3	Comp: SMTFU-4&5	Comp: MTFU-13&14	Comp: MTFU-15&16	Discharge SMT SLU-1	Discharge SMT SLU-1 duplicate			Fume Composite	Fume	Fume Slurry	Fume duplicate	
Sample Date	04-Oct 1988	04-Oct 1988	04-Oct 1988	04-Oct 1988	04-Oct 1988	04-Oct 1988	04-Oct 1988	04-Oct 1988	05-Oct 1988	05-Oct 1988			13-Mar 1991	13-Mar 1991	13-Mar 1991	13-Mar 1991	
Sample Type	fume waste	fume waste	fume waste	fume waste	fume waste	fume waste	fume waste	fume waste	fume waste	fume waste			Dried Fume	Dried Fume	Fume Slurry	Dried Fume	
Sample Depth, Ft	surface	0-3.0	0-3.0	0-3.0	0-3.0	0-3.5	0-3.0	0-3.0			EP Toxicity	TCLP	0-0.5	0-0.5	surface	0-0.5	
Laboratory	Am Test	Am Test	Am Test	Am Test	Am Test	Am Test	Am Test	Am Test	Am Test	Am Test	Maximum	Maximum	CAS	CAS	CAS	CAS	
Report Number or Date	36-88	36-88	36-88	36-88	36-88	36-88	36-88	36-88	36-88	36-88	Allowable	Allowable	K911367	K911367	K911367	K911367	
Laboratory Sample Number	820019	820020	820021	820022	820023	820024	820025	820026	820018	d820018	Concentr.	Concentr.	K1367-4	K1367-5	K1367-6	K1367-5	
TCLP or E P TOXICITY	E P TOX	E P TOX	E P TOX	E P TOX	E P TOX	E P TOX	E P TOX	E P TOX					TCLP	TCLP	TCLP	TCLP	
Elements/Metals																	
Arsenic	0.22	0.33	0.36	0.36	0.22	0.36	0.27	0.21			5	5	0.4	0.2	0.4	0.1	ALL SAMPLES < TCLP/EPT
Barium	<1	<1	<1	<1	<1	<1	<1	<1			100	100	1	1.2	0.6	1.3	ALL SAMPLES < TCLP/EPT
Cadmium	0.09	0.16	0.16	0.15	0.2	0.13	0.13	0.11			1	1	<0.01	<0.01	<0.01	<0.01	ALL SAMPLES < TCLP/EPT
Chromium	<0.05	<0.05	0.14	<0.05	<0.05	<0.05	<0.05	<0.05			5	5	<0.01	0.01	<0.01	0.02	ALL SAMPLES < TCLP/EPT
Copper	<0.05	1.4	0.82	0.39	0.42	0.35	0.34	0.25			–	–					
Lead	0.14	3.9	4.1	1.7	2.5	1.2	1.3	0.69			5	5	0.26	0.22	0.15	0.22	ALL SAMPLES < TCLP/EPT
Mercury	<0.001	<0.001	<0.001	0.002	<0.001	<0.001	0.001	<0.001			0.2	0.2	<0.001	<0.001	<0.001	<0.001	ALL SAMPLES < TCLP/EPT
Nickel	0.11	0.16	0.07	0.07	0.07	0.16	<0.05	<0.05			–	–					
Selenium	<0.05	0.08	0.09	0.04	0.09	0.08	0.07	0.06			1	1	<0.1	<0.1	0.1	<0.1	ALL SAMPLES < TCLP/EPT
Silver	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05			5	5	<0.01	<0.01	<0.01	<0.01	ALL SAMPLES < TCLP/EPT
Zinc	0.89	16	11	6	9	3	4	2			–	–					
Semivolatile Organics																	
2,4,5-Trichlorophenol												400	<0.05	<0.05	<0.05		ALL SAMPLES < TCLP/EPT
2,4,6-Trichlorophenol												2	<0.05	<0.05	<0.05		ALL SAMPLES < TCLP/EPT
2,4-Dinitrotoluene												0.13	<0.05	<0.05	<0.05		ALL SAMPLES < TCLP/EPT
Cresol, total												200	<0.05	<0.05	<0.05		ALL SAMPLES < TCLP/EPT
Cresol, m,p-													<0.05	<0.05	<0.05		
Cresol, m-												200					
Cresol, o-												200	<0.05	<0.05	<0.05		ALL SAMPLES < TCLP/EPT
Cresol, p-												200					
Hexachrolobenzene												0.13	<0.05	<0.05	<0.05		ALL SAMPLES < TCLP/EPT
Hexachrolobutadiene												0.5	<0.05	<0.05	<0.05		ALL SAMPLES < TCLP/EPT
Hexachroloethane												3	<0.05	<0.05	<0.05		ALL SAMPLES < TCLP/EPT
Nitrobenzene												2	<0.05	<0.05	<0.05		ALL SAMPLES < TCLP/EPT
Pentachlorophenol												100	<0.2	<0.2	<0.2		ALL SAMPLES < TCLP/EPT
Pyridine												5	<0.2	<0.2	<0.2		ALL SAMPLES < TCLP/EPT

FOOTNOTES:

(1) New Waste Fume Lagoon – NWFL

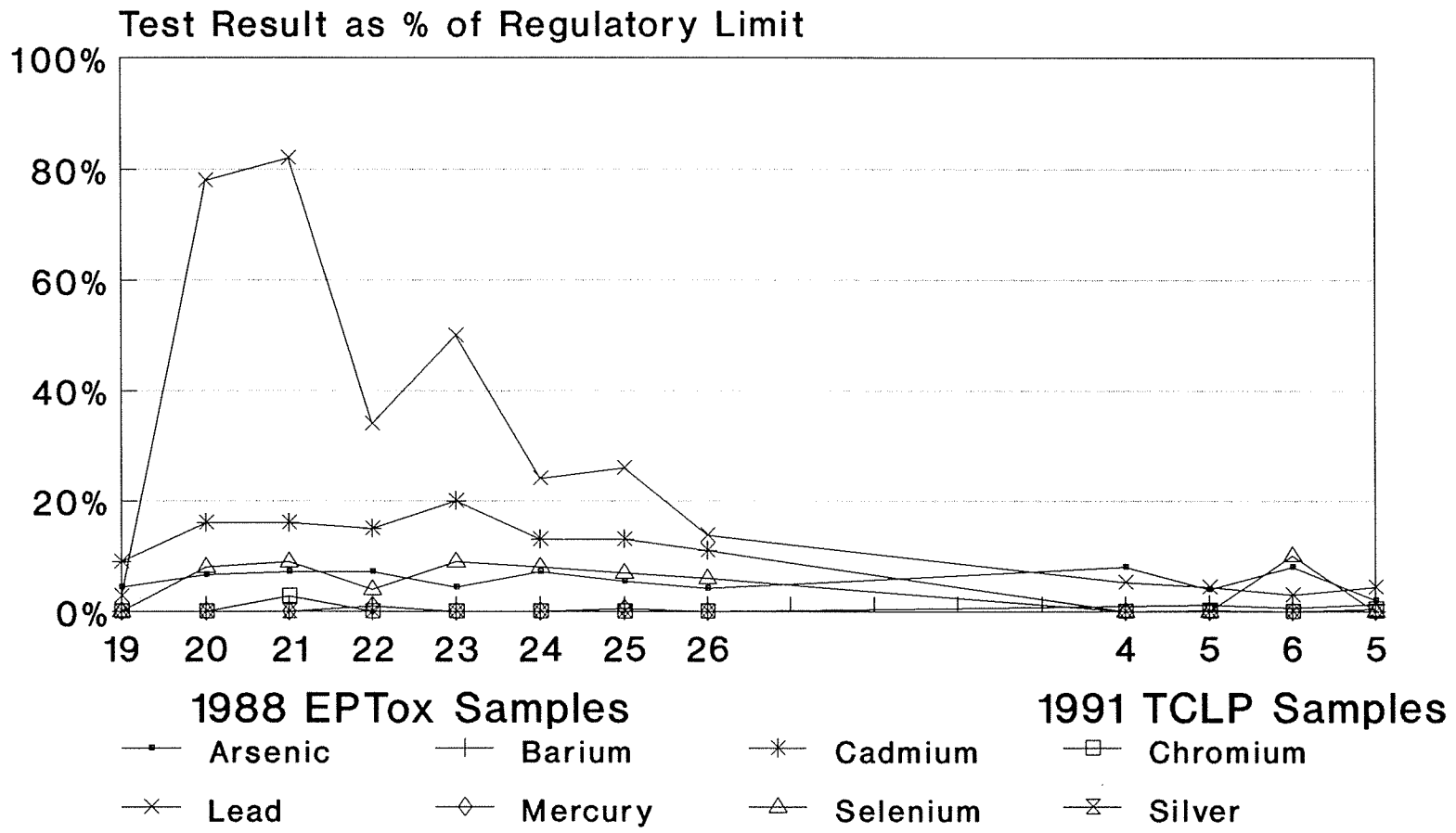
(2) Fume Waste Lagoon – FWL

(3) Fume Waste Disposal Area-FWDA

(4) Sample of slurry as discharged into lagoon. Results are reported as liquid in mg/liter. All other fume samples reported as mg/kg, dry weight basis.

PW 30001169

Fume Waste TCLP/EPTox
SMI 1988 & 1991 Samples



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PW 30001170

Columbia
Analytical
Services INC.

April 9, 1991

Pat Wicks
Environmental Engineering & Consulting, Inc.
19125 Northcreek Parkway
Suite 120
Bothell, WA 98011-8002

Re: **Rock Island Wa./Project #39200**

Dear Pat:

Enclosed are the results of the soil and water samples submitted to our lab on March 14, 1991. Preliminary results were transmitted via facsimile on April 4, 1991. For your reference, our service request number for this work is K911367.

All analyses were performed in accordance with the laboratory's quality assurance program.

Please call if you have any questions.

Respectfully submitted,

Columbia Analytical Services, Inc.

Abbie Spielman
Project Chemist

AS/das

PW 30001171

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Environmental Engineering & Consulting, Inc.	**Date Received:**	03/14/91
Submitted By:	Pat Wicks	**Date TCLP Performed:**	03/25/91
Project:	Rock Island Wa./#39200	**Date Analyzed:**	03/26/91
Sample Matrix:	Soil	**Work Order #:**	K911367

Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
mg/L (ppm) in TCLP Extract

		Sample Name:		**Pond #1,2,8 Comp**	**Pond #4**
		Lab Code:		**K1367-4**	**K1367-5**
Analytes	**Methods**	**MRL**	**Regulatory Limit***		
Arsenic	3010/6010	0.1	5.0	0.4	0.2
Barium	3010/6010	0.1	100	1.0	1.2
Cadmium	3010/6010	0.01	1.0	ND	ND
Chromium	3010/6010	0.01	5.0	ND	0.01
Lead	3010/6010	0.05	5.0	0.26	0.22
Mercury	7470	0.001	0.2	ND	ND
Selenium	3010/6010	0.1	1.0	ND	ND
Silver	3010/6010	0.01	5.0	ND	ND

MRL Method Reporting Limit
***** From 40 CFR Part 261, et. al. and *Federal Register*, March 29, 1990 and June 29, 1990
ND None Detected at or above the method reporting limit

Approved by Abbie Spellman Date 4/11/91

PW 30001172

00001

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Environmental Engineering & Consulting, Inc.	**Date Received:**	03/14/91
Submitted By:	Pat Wicks	**Date TCLP Performed:**	03/25/91
Project:	Rock Island Wa./#39200	**Date Analyzed:**	03/26/91
Sample Matrix:	Water	**Work Order #:**	K911367

Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
mg/L (ppm) in TCLP Extract

				Sample Name:	**Pond #6**	**Method Blank**
				Lab Code:	**K1367-6**	**K1367-MB**
Analytes	**Methods**	**MRL**	**Regulatory Limit***			
Arsenic	3010/6010	0.1	5.0		0.4	ND
Barium	3010/6010	0.1	100		0.6	ND
Cadmium	3010/6010	0.01	1.0		ND	ND
Chromium	3010/6010	0.01	5.0		ND	ND
Lead	3010/6010	0.05	5.0		0.15	ND
Mercury	7470	0.001	0.2		ND	ND
Selenium	3010/6010	0.1	1.0		0.1	ND
Silver	3010/6010	0.01	5.0		ND	ND

MRL Method Reporting Limit
***** From 40 CFR Part 261, et. al. and *Federal Register*, March 29, 1990 and June 29, 1990
ND None Detected at or above the method reporting limit

Approved by Abbie Spellman Date 4/11/91

PW 30001173

00002

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Environmental Engineering & Consulting, Inc.	**Date Received:**	03/14/91
Submitted By:	Pat Wicks	**Date TCLP Performed:**	03/25/91
Project:	Rock Island Wa./#39200	**Date Extracted:**	03/28/91
Sample Matrix:	Soil	**Date Analyzed:**	03/29/91
		Work Order #:	K911367

Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Semivolatile Organic Compounds
mg/L (ppm) in TCLP Extract

	Sample Name:			**Pond #1,2,8 Comp**	**Pond #4**
	Lab Code:			**K1367-4**	**K1367-5**
Analytes	**Methods**	**MRL**	**Regulatory Limit***		
Hexachloroethane	3510/8270	0.05	3	ND	ND
Nitrobenzene	3510/8270	0.05	2	ND	ND
Hexachlorobutadiene	3510/8270	0.05	0.5	ND	ND
2,4-Dinitrotoluene	3510/8270	0.05	0.13	ND	ND
Hexachlorobenzene	3510/8270	0.05	0.13	ND	ND
2,4,6-Trichlorophenol	3510/8270	0.05	2	ND	ND
2,4,5-Trichlorophenol	3510/8270	0.05	400	ND	ND
Pentachlorophenol	3510/8270	0.2	100	ND	ND
Pyridine	3510/8270	0.2	5	ND	ND
o-Cresol	3510/8270	0.05	200	ND	ND
m,p-Cresols	3510/8270	0.05	200	ND	ND
Total Cresols	3510/8270	0.05	200	ND	ND

MRL Method Reporting Limit
***** From 40 CFR Part 261, et. al. and *Federal Register*, March 29, 1990 and June 29, 1990
ND None Detected at or above the method reporting limit

Approved by Abbie Spielman Date 4/1/91

PW 30001174

00003

COLUMBIA ANALYTICAL SERVICES, INC.

Analytical Report

Client:	Environmental Engineering & Consulting, Inc.	**Date Received:**	03/14/91
Submitted By:	Pat Wicks	**Date TCLP Performed:**	03/25/91
Project:	Rock Island Wa./#39200	**Date Extracted:**	03/28/91
Sample Matrix:	Water	**Date Analyzed:**	03/29/91
		Work Order #:	K911367

Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Semivolatile Organic Compounds
mg/L (ppm) in TCLP Extract

Sample Name:				**Pond #6**	**Method Blank**
Lab Code:				**K1367-6**	**K1367-MB**
Analytes	**Methods**	**MRL**	**Regulatory Limit***		
Hexachloroethane	3510/8270	0.05	3	ND	ND
Nitrobenzene	3510/8270	0.05	2	ND	ND
Hexachlorobutadiene	3510/8270	0.05	0.5	ND	ND
2,4-Dinitrotoluene	3510/8270	0.05	0.13	ND	ND
Hexachlorobenzene	3510/8270	0.05	0.13	ND	ND
2,4,6-Trichlorophenol	3510/8270	0.05	2	ND	ND
2,4,5-Trichlorophenol	3510/8270	0.05	400	ND	ND
Pentachlorophenol	3510/8270	0.2	100	ND	ND
Pyridine	3510/8270	0.2	5	ND	ND
o-Cresol	3510/8270	0.05	200	ND	ND
m,p-Cresols	3510/8270	0.05	200	ND	ND
Total Cresols	3510/8270	0.05	200	ND	ND

MRL Method Reporting Limit
***** From 40 CFR Part 261, et. al. and *Federal Register*, March 29, 1990 and June 29, 1990
ND None Detected at or above the method reporting limit

Approved by Abbi Spielman Date 4/1/91

PW 30001175

00004

APPENDIX A

LABORATORY QC RESULTS

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-10

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Environmental Engineering & Consulting, Inc.	**Date Received:**	03/14/91
Submitted By:	Pat Wicks	**Date TCLP Performed:**	03/25/91
Project:	Rock Island Wa./#39200	**Date Analyzed:**	03/26/92
Sample Matrix:	Soil	**Work Order #:**	K911367

QA/QC Report
Duplicate Summary
Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
mg/L (ppm) in TCLP Extract

Sample Name: Pond #4
Lab Code: K1367-5

Analytes	Methods	MRL	Sample Result	Duplicate Sample Result	Average	Relative Percent Difference
Arsenic	3010/6010	0.1	0.2	0.1	0.2	50
Barium	3010/6010	0.1	1.2	1.3	1.2	8
Cadmium	3010/6010	0.01	ND	ND	ND	--
Chromium	3010/6010	0.01	0.01	0.02	0.02	50
Lead	3010/6010	0.05	0.22	0.22	0.22	<1
Mercury	7470	0.001	ND	ND	ND	--
Selenium	3010/6010	0.1	ND	ND	ND	--
Silver	3010/6010	0.01	ND	ND	ND	--

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Abbie Spielman Date 4/11/92

PW 30001177

00006

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Environmental Engineering & Consulting, Inc.	**Date Received:**	03/14/91
Submitted By:	Pat Wicks	**Date TCLP Performed:**	03/25/91
Project:	Rock Island Wa./#39200	**Date Analyzed:**	03/26/91
Sample Matrix:	Soil	**Work Order #:**	K911367

QA/QC Report
Matrix Spike Summary
Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Metals
mg/L (ppm) in TCLP Extract

Sample Name: Pond #4
Lab Code: K1367-5

Analytes	Methods	Spike Level	MRL	Sample Result	Spiked Sample Result	Percent Recovery
Arsenic	3010/6010	5.0	0.1	0.2	5.6	108
Barium	3010/6010	5.0	0.1	1.2	6.8	112
Cadmium	3010/6010	1.0	0.01	ND	1.03	103
Chromium	3010/6010	5.0	0.01	0.01	5.31	106
Lead	3010/6010	5.0	0.05	0.22	5.48	106
Mercury	7470	0.01	0.001	ND	0.010	100
Selenium	3010/6010	1.0	0.1	ND	1.1	110
Silver	3010/6010	1.0	0.01	ND	1.07	107

MRL Method Reporting Limit
ND None Detected at or above the method reporting limit

Approved by Abbie Appelhans Date 4/11/91

PW 30001178

00007

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Environmental Engineering & Consulting, Inc.	**Date Received:**	03/14/91
Submitted By:	Pat Wicks	**Date TCLP Performed:**	03/25/91
Project:	Rock Island Wa./#39200	**Date Extracted:**	03/28/91
Sample Matrix:	Soil/Water	**Date Analyzed:**	03/29/91
		Work Order #:	K911367

QA/QC Report
Surrogate Recovery Summary
Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Semivolatile Organic Compounds
(EPA Methods 3510/8270)
in TCLP Extract

P e r c e n t R e c o v e r y

Sample Name: / Lab Code:	Pond #1,2,8 Comp K1367-4	Pond #4 K1367-5	Pond #6 K1367-6	EPA Percent Recovery Acceptance Criteria
Analytes				
2-Fluorophenol	63.6	64.3	58.4	21-100
Phenol-D_6	60.8	64.4	56.1	10-94
2,4,6-Tribromophenol	85.4	90.7	87.1	10-123
Nitrobenzene-D_5	66.7	71.7	61.1	35-114
2-Fluorobiphenyl	66.5	74.2	63.9	43-116
Terphenyl-D_{14}	111	101	110	33-141

Approved by Abbie Spielman Date 4/11/91

PW 30001179

00008

COLUMBIA ANALYTICAL SERVICES, INC.

Client:	Environmental Engineering & Consulting, Inc.	**Date Received:**	03/14/91
Submitted By:	Pat Wicks	**Date TCLP Performed:**	03/25/91
Project:	Rock Island Wa./#39200	**Date Extracted:**	03/28/91
Sample Matrix:	Soil	**Date Analyzed:**	03/29/91
		Work Order #:	K911367

QA/QC Report
Surrogate Recovery Summary
Toxicity Characteristic Leaching Procedure (TCLP)
EPA Method 1311
Semivolatile Organic Compounds
(EPA Methods 3510/8270)
in TCLP Extract

P e r c e n t R e c o v e r y

Sample Name: / Lab Code:	**Method Blank K1367-MB**	**EPA Percent Recovery Acceptance Criteria**
Analytes		
2-Fluorophenol	72.0	21-100
Phenol-D_6	66.2	10-94
2,4,6-Tribromophenol	87.4	10-123
Nitrobenzene-D_5	76.8	35-114
2-Fluorobiphenyl	72.0	43-116
Terphenyl-D_{14}	99.5	33-141

Approved by Abbi Appelman Date 4/11/91

PW 30001180

00009

APPENDIX B

CHAIN OF CUSTODY INFORMATION

1317 South 13th Avenue • P.O. Box 479 • Kelso, Washington 98626 • Telephone 206/577-7222 • Fax 206/636-10

ENVIRONMENTAL ENGINEERING & CONSULTING, INC.
19125 Northcreek Parkway, Suite 120
Bothell, Washington 98011-8002
(206) 485-3437 FAX (206) 483-1058

CHAIN OF CUSTODY RECORD

Sampled by: Tom Clymer
Date: 3-13-91

Project #: 39200
Location: Rock Island Wa.

Sample Number	Date/Time Sampled	Type of Sample	# of Containers	Lab Sample #	Analyses Required and Comments
Pond #1	3-13-91	Fes./s. Solid Fume	1		
Pond #2	3-13-91	Fes./s. Solid Fume	1		
Pond #4	3-13-91	Fes./s. Solid Fume	1		
Pond #6	3-13-91	Liquid s. Fume	2		
Pond #8	3-13-91	Solid Fes. Fume	1		

Relinquished by: Tom Clymer
Signature
Organization: Silicon MetalTech Inc.
Date: 3-13-91 Time: 1:00 PM
Received by: [signature]
Signature
Organization: CAS 3/14/91 830

Relinquished by: _____
Signature
Organization: _____
Date: _____ Time: _____
Received by: _____
Signature
Organization: _____

Relinquished by: _____
Signature
Organization: _____
Date: _____ Time: _____
Received by: _____
Signature
Organization: _____

Additional Comments:

Laboratory Please Note: Results are to be reported as detected values or as less than detected values with detection limit; do not use U, J, B, K, M or similar data reporting qualifiers.

00011

Environmental Engineering & Consulting, Inc.

INSTRUCTIONS FOR LABORATORY ANALYSIS

Date: 3/11/91

Project Number 3920c
Please show this Project no. on invoices, charge slips and statements

Test 2 samples: one from pond 4 and one composite of ponds 1, 2 and 8

Turnaround Needed:
- Normal [X]
- One week [ ]
- Other [ ] _____

Compositing: [X] Yes [ ] No — a. Composite samples from ponds 1, 2 and 8 into c

Chromatograms required: [ ] Yes [ ] No

Client to pay invoice: [X] Yes, but send invoice to EEC to be forwarded to client [ ] No, EEC to pay

Fax results as soon as available: [X] Yes [ ] No

Analyses required:	TCLP SV Extraction	TCLP metals	TCLP SVorganics 8270	Chromatograms for	Compositing
Prices:	$95	$105	$380	$38	$10
Analyses required:					
Prices:					

19125 Northcreek Parkway, Suite 111 Bothell, WA 98011-8002 206.485.3437 FAX 206.485.1055

Environmental Engineering & Consulting, Inc.

INSTRUCTIONS FOR LABORATORY ANALYSIS

Date: 3/11/91

Project Number 39200
Please show this Project no. on invoices, charge slips and statements

for: Fume Slurry Samples only in one L. bottles; only one sample to be tested

Turnaround Needed:
- **Normal** [X]
- **One week** [ ]
- **Other** [ ] _____

Compositing: [ ] Yes [X] No, unless needed

Chromatograms required: [X] Yes [ ] No

Client to pay invoice: [X] Yes, but send invoice to EEC, to be forwarded to client [ ] No, EEC to pay

Fax results as soon as available: [X] Yes [ ] No

Analyses required:	TCLP SV extraction	TCLP metals	TCLP SVorgnics 8270 ←	chromatograms for	
Prices:	$95	$105	$380	$38	
Analyses required:					
Prices:					

PW 30001184

NPDES discharge permit renewal application and storm water permit application

C:\reports\229r.wr1

Environmental
Engineering &
Consulting, Inc.

March 19, 1991

Mr. Jim Trunzo
Executive Vice President
Silicon Metaltech, Inc.
100 4th Street
Rock Island, Washington 98850

Dear Jim:

Enclosed are completed NPDES permit application forms (except for entries to be made by you or Robert) for renewal of the effluent discharge permit and for the storm water discharge permit, including related information:

a. NPDES permit application 2C forms for renewal of the effluent discharge permit

b. NPDES permit application 2F forms for storm water discharge permit

c. Complete set of instructions and forms for storm water discharge permit application

d. Schematic water flow diagram to be attached to permit application Forms 2C and 2F

e. Site Plan (two pages) to be attached to the storm water discharge permit application

f. Topographic map to be attached to permit application Form 1

g. Monitoring data summary 1986-1990 (FYI only, not to be attached to applications)

Please review all information in the application (including the schematic water flow diagram site plan), since you are responsible that it is correct. In particular, review the storm water permit application, Table 2F-2. Any items from that table that I have not included in VII.E. as being used at the plant should be added to VII.E. If you would like to know the basis for any information, calculation or data on the forms, please call.

I have assumed that with the exception the two areas shown on the site plan and possibly the raw materials storage area, there is no surface runoff to the Columbia River from any area of the plant. If this is not correct, please advise.

Section III of the storm water permit application requests hazardous waste accumulation areas to be marked on a site map. I assumed the only hazardous waste you generate is spent Safety-Kleen solvent from parts washers and that this material remains in use and does not become a waste until it is picked up by Safety-Kleen. Consequently you would not "accumulate" hazardous waste and nothing has been so marked on the site plan. If this is not correct or other wastes are generated or handled differently, please advise.

When you submit the storm water permit application, please attach a site drawing showing topographic information. I would suggest the survey/topographic map prepared in 1988 by Gahringer & Associates of Wenatchee.

Please send a copy of the storm water permit application to the U S Environmental Protection Agency, Region 10, 1200 Sixth Avenue, Seattle, Washington 98101.

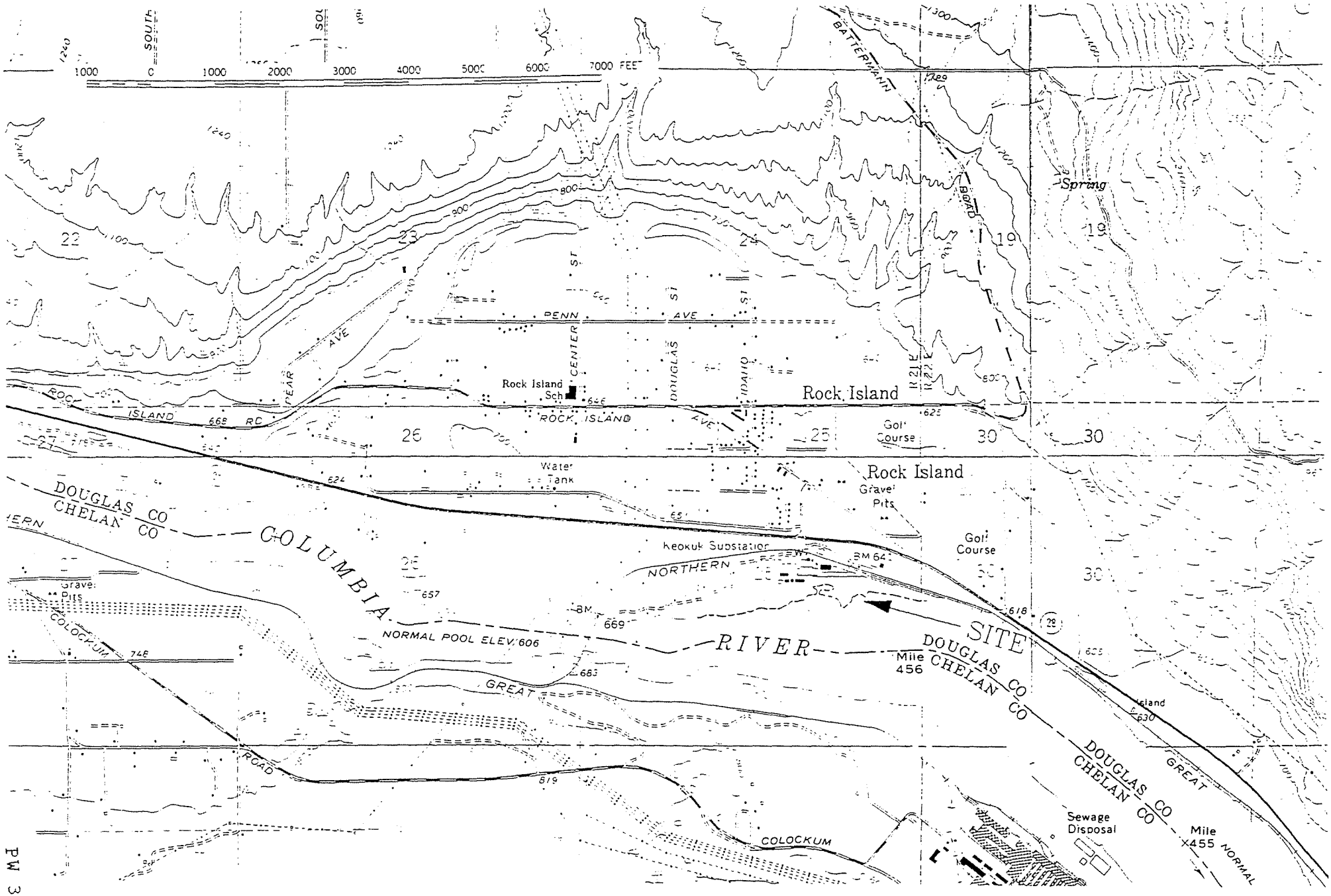
I would appreciate your sending me a copy of the applications submitted also. Please do not hesitate to call me if there are any questions.

Sincerely,

Patrick H. Wicks, PE, CHMM
President

Enclosures

cc: Robert L. Miller


1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
BATTERMANN
Spring
PENN AVE
CENTER ST
DOUGLAS ST
IDAHO ST
PEAR AVE
ROCK ISLAND RD
Rock Island Sch
ROCK ISLAND AVE
Rock Island
Golf Course
Water Tank
Gravel Pits
DOUGLAS CO
CHELAN CO
COLUMBIA
RIVER
NORMAL POOL ELEV. 606
Keokuk Substation
NORTHERN
BM 669
BM 64
SITE
Mile 456
GREAT
COLOCKUM
ROAD
Sewage Disposal
Mile 455 NORMAL
R 21 E
R 22 E

PW 30000894

Please print or type in the unshaded areas only. | WAD000756940 | Approval expires 12-31-85

FORM 2C NPDES

U.S. ENVIRONMENTAL PROTECTION AGENCY
APPLICATION FOR PERMIT TO DISCHARGE WASTEWATER
EXISTING MANUFACTURING, COMMERCIAL, MINING AND SILVICULTURAL OPERATIONS
Consolidated Permits Program

I. OUTFALL LOCATION

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. OUTFALL NUMBER (list)	B. LATITUDE			C. LONGITUDE			D. RECEIVING WATER (name)
	1. DEG.	2. MIN.	3. SEC.	1. DEG.	2. MIN.	3. SEC.	
001	47	22	11	120	08	16	Columbia River

II. FLOWS, SOURCES OF POLLUTION, AND TREATMENT TECHNOLOGIES

A. Attach a line drawing showing the water flow through the facility. Indicate sources of intake water, operations contributing wastewater to the effluent, and treatment units labeled to correspond to the more detailed descriptions in Item B. Construct a water balance on the line drawing by showing average flows between intakes, operations, treatment units, and outfalls. If a water balance cannot be determined *(e.g., for certain mining activities)*, provide a pictorial description of the nature and amount of any sources of water and any collection or treatment measures.

B. For each outfall, provide a description of: (1) All operations contributing wastewater to the effluent, including process wastewater, sanitary wastewater, cooling water, and storm water runoff; (2) The average flow contributed by each operation; and (3) The treatment received by the wastewater. Continue on additional sheets if necessary.

1. OUTFALL NO. (list)	2. OPERATION(S) CONTRIBUTING FLOW		3. TREATMENT	
	a. OPERATION (list)	b. AVERAGE FLOW (include units)	a. DESCRIPTION	b. LIST CODES FROM TABLE 2C-1
001	Furnaces	2,187,000gpd	Discharge	A-4
	Storm Water		Discharge	A-4
	Fume Slurry Ponds	120 gpd	Evaporation	1-E
			Drying Beds	5-H
			Sedimentation	1-U

PW 30000895

OFFICIAL USE ONLY *(effluent guidelines sub-categories)*

CONTINUED FROM THE FRONT

C. Except for storm runoff, leaks, or spills, are any of the discharges described in Items II-A or B intermittent or seasonal?

☐ YES *(complete the following table)* ☒ NO *(go to Section III)*

1. OUTFALL NUMBER *(list)*	2. OPERATION(s) CONTRIBUTING FLOW *(list)*	3. FREQUENCY		4. FLOW				
		a. DAYS PER WEEK *(specify average)*	b. MONTHS PER YEAR *(specify average)*	a. FLOW RATE *(in mgd)*		b. TOTAL VOLUME *(specify with units)*		c. DURATION *(in days)*
				1. LONG TERM AVERAGE	2. MAXIMUM DAILY	1. LONG TERM AVERAGE	2. MAXIMUM DAILY	

III. PRODUCTION

A. Does an effluent guideline limitation promulgated by EPA under Section 304 of the Clean Water Act apply to your facility?

☐ YES *(complete Item III-B)* ☒ NO *(to to Section IV)*

B. Are the limitations in the applicable effluent guideline expressed in terms of production *(or other measure of operation)*?

☐ YES *(complete Item III-C)* ☐ NO *(go to Section IV)*

C. If you answered "yes" to Item III-B, list the quantity which represents an actual measurement of your level of production, expressed in the terms and units used in the applicable effluent guideline, and indicate the affected outfalls.

1. AVERAGE DAILY PRODUCTION			2. AFFECTED OUTFALLS *(list outfall numbers)*
a. QUANTITY PER DAY	b. UNITS OF MEASURE	c. OPERATION, PRODUCT, MATERIAL, ETC. *(specify)*	

IV. IMPROVEMENTS

A. Are you now required by any Federal, State or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions.

☐ YES *(complete the following table)* ☒ NO *(go to Item IV-B)*

1. IDENTIFICATION OF CONDITION, AGREEMENT, ETC.	2. AFFECTED OUTFALLS		3. BRIEF DESCRIPTION OF PROJECT	4. FINAL COMPLIANCE DATE	
	a. NO.	b. SOURCE OF DISCHARGE		a. REQUIRED	b. PROJECTED

PW 30000896

B. OPTIONAL: You may attach additional sheets describing any additional water pollution control programs *(or other environmental projects which may affect your discharges)* you now have underway or which you plan. Indicate whether each program is now underway or planned, and indicate your actual or planned schedules for construction. ☐ MARK "X" IF DESCRIPTION OF ADDITIONAL CONTROL PROGRAMS IS ATTACHED

WAD000756940

OMB No. 2000-0059
Approval expires 12-31-85

V. INTAKE AND EFFLUENT CHARACTERISTICS

A, B, & C: See instructions before proceeding — Complete one set of tables for each outfall — Annotate the outfall number in the space provided. NOTE: Tables V-A, V-B, and V-C are included on separate sheets numbered V-1 through V-9.

D. Use the space below to list any of the pollutants listed in Table 2c-3 of the instructions, which you know or have reason to believe is discharged or may b discharged from any outfall. For every pollutant you list, briefly describe the reasons you believe it to be present and report any analytical data in y possession.

1. POLLUTANT	2. SOURCE	1. POLLUTANT	2. SOURCE
None			

VI. POTENTIAL DISCHARGES NOT COVERED BY ANALYSIS

Is any pollutant listed in Item V-C a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

☒ YES *(list all such pollutants below)* ☐ NO *(go to Item VI-B)*

1,1,1-Trichloroethane
2,4,6-Trichlorophenol
Acenaphthene
Anthracene
Benzene
Chromium
Copper
Dichlorodifluoromethane
Ethylbenzene
Fluorene
Lead
Mercury
Methylene chloride
Napthalene
Nickel
Phenanthrene
Phenol
Toluene
Total Cyanide
Trichloroethylene
Zinc

PW 30000897

CONTINUED FROM THE FRONT

VII. BIOLOGICAL TOXICITY TESTING DATA

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

☐ YES *(identify the test(s) and describe their purposes below)* ☒ NO *(go to Section VIII)*

VIII. CONTRACT ANALYSIS INFORMATION

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

☒ YES *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* ☐ NO *(go to Section IX)*

A. NAME	B. ADDRESS	C. TELEPHONE (area code & no.)	D. POLLUTANTS ANALYZED (list)
Lauchs Testing Laboratories, Inc.	940 South Harney St. Seattle, WA 98108	(206)767-5060	Priority Pollutant and other hazardo substances.
AM Test, Inc.	14603 NE 87th St. Redmond, WA 98052	(206)885-1664	Priority Pollutant metals/elements, cyanide, phenol

IX. CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. NAME & OFFICIAL TITLE *(type or print)*	B. PHONE NO. *(area code & no.)*
C. SIGNATURE	D. DATE SIGNED

PW 30000898

PLEASE PRINT OR TYPE IN THE UNSHADED AREAS ONLY. You may report some or all of this information on separate sheets *(use the same format)* instead of completing these pages. SEE INSTRUCTIONS.

EPA I.D. NUMBER *(copy from Item 1 of Form 1)*: WAD000756940

Form Approved. OMB No. 2000-0059 Approval expires 12-31-85

V. INTAKE AND EFFLUENT CHARACTERISTICS *(continued from page 3 of Form 2-C)*

OUTFALL NO.: 001

PART A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

1. POLLUTANT	2. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	2. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	2. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	2. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	2. EFFLUENT d. NO. OF ANALYSES	3. UNITS (specify if blank) a. CONCENTRATION	3. UNITS (specify if blank) b. MASS	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	4. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	4. INTAKE (optional) b. NO. OF ANALYSES
a. Biochemical Oxygen Demand *(BOD)*												
b. Chemical Oxygen Demand *(COD)*			NOT PRESENTLY MONITORED, BUT WOULD									
c. Total Organic Carbon *(TOC)*			BE WILLING TO SAMPLE AND TEST IF REQUIRED.									
d. Total Suspended Solids *(TSS)*												
e. Ammonia *(as N)*												
f. Flow	VALUE 2,987,432		VALUE		VALUE 2,187,000				gpd	VALUE		
g. Temperature *(winter)*	VALUE all year	24	VALUE		VALUE	22		°C		VALUE		
h. Temperature *(summer)*	VALUE		VALUE		VALUE			°C		VALUE		
i. pH	~~MINIMUM~~ 7.4 avg	MAXIMUM 7.8	MINIMUM	MAXIMUM				STANDARD UNITS				

PART B - Mark "X" in column 2-a for each pollutant you know or have reason to believe is present. Mark "X" in column 2-b for each pollutant you believe to be absent. If you mark column 2a for any pollutant which is limited either directly, or indirectly but expressly, in an effluent limitations guideline, you must provide the results of at least one analysis for that pollutant. For other pollutants for which you mark column 2a, you must provide quantitative data or an explanation of their presence in your discharge. Complete one table for each outfall. See the instructions for additional details and requirements.

1. POLLUTANT AND CAS NO. *(if available)*	2. MARK 'X' a. BELIEVED PRESENT	2. MARK 'X' b. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	3. EFFLUENT c. LONG TERM AVRG. VALUE (if available) (2) MASS	3. EFFLUENT d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) b. NO. OF ANALYSES
a. Bromide (24969-67-9)		X												0
b. Chlorine, Total Residual		X												0
c. Color		X												0
d. Fecal Coliform		X												0
e. Fluoride (16984-48-8)	X		No process source expected; maybe present in intake											0
f. Nitrate–Nitrite *(as N)*	X		No process source expected: maybe present in intake											0

PM 3000899

ITEM V-B CONTINUED FROM FRONT

1. POLLUTANT AND CAS NO. (If available)	2. MARK 'X'		3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. BELIEVED PRESENT	b. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (If available) (2) MASS	c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (If available) (2) MASS	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
g. Nitrogen, Total Organic (as N)		X												
h. Oil and Grease		X												
i. Phosphorus (as P), Total (7723-14-0)	X		no process source expected; may be present in intake or storm water runoff											
j. Radioactivity														
(1) Alpha, Total		X												
(2) Beta, Total		X												
(3) Radium, Total		X												
(4) Radium 226, Total		X												
k. Sulfate (as SO_4) (14808-79-8)	X		no process source expected; may be present in intake or storm water runoff											
l. Sulfide (as S)		X												
m. Sulfite (as SO_3) (14265-45-3)		X												
n. Surfactants		X												
o. Aluminum, Total (7429-90-5)	X		no process source expected; may be present in intake or storm water runoff											
p. Barium, Total (7440-39-3)	X		no process source expected; may be present in intake or storm water runoff											
q. Boron, Total (7440-42-8)		X												
r. Cobalt, Total (7440-48-4)		X												
s. Iron, Total (7439-89-6)	X		no process source expected; may be present in intake or storm water runoff											
t. Magnesium, Total (7439-95-4)		X												
u. Molybdenum, Total (7439-98-7)		X												
v. Manganese, Total (7439-96-5)	X		no process source expected; may be present in intake or storm water runoff											
w. Tin, Total (7440-31-5)	X		no process source expected; may be present in intake or storm water runoff											
x. Titanium, Total (7440-32-6)		X												

EPA I.D. NUMBER (copy from Item 1 of Form 1)	OUTFALL NUMBER
WAD000756940	001

Form Approved.
OMB No. 2000-0059
Approval expires 12-31-85

CONTINUED FROM PAGE 3 OF FORM 2-C

PART C - If you are a primary industry and this outfall contains process wastewater, refer to Table 2c-2 in the instructions to determine which of the GC/MS fractions you must test for. Mark "X" in column 2-a for all such GC/MS fractions that apply to your industry and for ALL toxic metals, cyanides, and total phenols. If you are not required to mark column 2-a *(secondary industries, nonprocess wastewater outfalls, and nonrequired GC/MS fractions)*, mark "X" in column 2-b for each pollutant you know or have reason to believe is present. Mark "X" in column 2-c for each pollutant you believe is absent. If you mark column 2a for any pollutant, you must provide the results of at least one analysis for that pollutant. If you mark column 2b for any pollutant, you must provide the results of at least one analysis for that pollutant if you know or have reason to believe it will be discharged in concentrations of 10 ppb or greater. If you mark column 2b for acrolein, acrylonitrile, 2,4 dinitrophenol, or 2-methyl-4, 6 dinitrophenol, you must provide the results of at least one analysis for each of these pollutants which you know or have reason to believe that you discharge in concentrations of 100 ppb or greater. Otherwise, for pollutants for which you mark column 2b, you must either submit at least one analysis or briefly describe the reasons the pollutant is expected to be discharged. Note that there are 7 pages to this part; please review each carefully. Complete one table *(all 7 pages)* for each outfall. See instructions for additional details and requirements.

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X'			3. EFFLUENT							4. UNITS		5. INTAKE (optional)		
	a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	a. CONCENTRATION	b. MASS	a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	a. LONG TERM AVERAGE VALUE (2) MASS	b. NO. OF ANALYSES
METALS, CYANIDE, AND TOTAL PHENOLS															
1M. Antimony, Total (7440-36-0)			X							3					0
2M. Arsenic, Total (7440-38-2)		X		0.004	0.07					3	ppm	lb/d	0.003	0.05	3
3M. Beryllium, Total, 7440-41-7)			X							3					0
4M. Cadmium, Total (7440-43-9)			X							3			ND		3
5M. Chromium, Total (7440-47-3)		X		0.017	0.31					3	ppm	lb/d			0
6M. Copper, Total (7440-50-8)		X		0.089	1.6					3	ppm	lb/d			0
7M. Lead, Total (7439-92-1)		X		ND						3	ppm	lb/d	0.001	0.02	3
8M. Mercury, Total (7439-97-6)			X							3			ND		3
9M. Nickel, Total (7440-02-0)		X		0.008	0.14					3	ppm	lb/d			0
10M. Selenium, Total (7782-49-2)			X							3			ND		3
11M. Silver, Total (7440-22-4)			X							3					0
12M. Thallium, Total (7440-28-0)			X							3					0
13M. Zinc, Total (7440-66-6)		X		0.011	0.2					3	ppm	lb/d			0
14M. Cyanide, Total (57-12-5)			X							3					0
15M. Phenols, Total			X							3					0
DIOXIN															
2,3,7,8-Tetrachlorodibenzo-P-Dioxin (1764-01-6)			X	DESCRIBE RESULTS											

PW 30000901

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION – VOLATILE COMPOUNDS															
1V. Acrolein (107-02-8)			X							0					0
2V. Acrylonitrile (107-13-1)			X							0					0
3V. Benzene (71-43-2)			X							2					0
4V. Bis *(Chloromethyl)* Ether (542-88-1)			X							0					0
5V. Bromoform (75-25-2)			X							2					0
6V. Carbon Tetrachloride (56-23-5)			X							2					0
7V. Chlorobenzene (108-90-7)			X							2					0
8V. Chlorodibromomethane (124-48-1)			X							2					0
9V. Chloroethane (75-00-3)			X							1					0
10V. 2-Chloroethylvinyl Ether (110-75-8)			X							1					0
11V. Chloroform (67-66-3)			X							2					0
12V. Dichlorobromomethane (75-27-4)			X							2					0
13V. Dichlorodifluoromethane (75-71-8)			X							0					0
14V. 1,1-Dichloroethane (75-34-3)			X							2					0
15V. 1,2-Dichloroethane (107-06-2)			X							2					0
16V. 1,1-Dichloroethylene (75-35-4)			X							2					0
17V. 1,2-Dichloropropane (78-87-5)			X							2					0
18V. 1,3-Dichloropropylene (542-75-6)			X							2					0
19V. Ethylbenzene (100-41-4)			X							2					0
20V. Methyl Bromide (74-83-9)			X							2					0
21V. Methyl Chloride (74-87-3)			X							2					0

PM 30000902

NPDES I.D. NUMBER (from page 1 of Form 1) WAD000756940 | OUTFALL NUMBER 001

Form Approved. OMB No. 2040-0059 Approval expires 12-31-85

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) b. NO. OF ANALYSES
GC/MS FRACTION – VOLATILE COMPOUNDS (continued)															
22V. Methylene Chloride (75-09-2)			X							2					0
23V. 1,1,2,2-Tetrachloroethane (79-34-5)			X							2					0
24V. Tetrachloroethylene (127-18-4)			X							2					0
25V. Toluene (108-88-3)			X							1					0
26V. 1,2-Trans-Dichloroethylene (156-60-5)			X							2					0
27V. 1,1,1-Trichloroethane (71-55-6)			X							2					0
28V. 1,1,2-Trichloroethane (79-00-5)			X							2					0
29V. Trichloroethylene (79-01-6)			X							2					0
30V. Trichlorofluoromethane (75-69-4)			X							0					0
31V. Vinyl Chloride (75-01-4)			X							2					0
GC/MS FRACTION – ACID COMPOUNDS															
1A. 2-Chlorophenol (95-57-8)			X							2					0
2A. 2,4-Dichlorophenol (120-83-2)			X							2					0
3A. 2,4-Dimethylphenol (105-67-9)			X							2					0
4A. 4,6-Dinitro-O-Cresol (534-52-1)			X							2					0
5A. 2,4-Dinitrophenol (51-28-5)			X							2					0
6A. 2-Nitrophenol (88-75-5)			X							2					0
7A. 4-Nitrophenol (100-02-7)			X							2					0
8A. P-Chloro-M-Cresol (59-50-7)			X							2					0
9A. Pentachlorophenol (87-86-5)			X							2					0
10A. Phenol (108-95-2)			X							2					0
11A. 2,4,6-Trichlorophenol (88-06-2)			X							2					0

PM 30000903

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS															
1B. Acenaphthene (83-32-9)			X							2					0
2B. Acenaphtylene (208-96-8)			X							2					0
3B. Anthracene (120-12-7)			X							2					0
4B. Benzidine (92-87-5)			X							2					0
5B. Benzo *(a)* Anthracene (56-55-3)			X							2					0
6B. Benzo *(a)* Pyrene (50-32-8)			X							2					0
7B. 3,4-Benzo-fluoranthene (205-99-2)			X							2					0
8B. Benzo *(ghi)* Perylene (191-24-2)			X							2					0
9B. Benzo *(k)* Fluoranthene (207-08-9)			X							1					0
10B. Bis *(2-Chloro-ethoxy)* Methane (111-91-1)			X							2					0
11B. Bis *(2-Chloro-ethyl)* Ether (111-44-4)			X							2					0
12B. Bis *(2-Chloroiso-propyl)* Ether (102-60-1)			X							2					0
13B. Bis *(2-Ethyl-hexyl)* Phthalate (117-81-7)			X							2					0
14B. 4-Bromo-phenyl Phenyl Ether (101-55-3)			X							2					0
15B. Butyl Benzyl Phthalate (85-68-7)			X							2					0
16B. 2-Chloro-naphthalene (91-58-7)			X							2					0
17B. 4-Chloro-phenyl Phenyl Ether (7005-72-3)			X							2					0
18B. Chrysene (218-01-9)			X							2					0
19B. Dibenzo *(a,h)* Anthracene (53-70-3)			X							2					0
20B. 1,2-Dichloro-benzene (95-50-1)			X							2					0
21B. 1,3-Dichloro-benzene (541-73-1)			X							2					0

PM 3000904

1. POLLUTANT AND CAS NUMBER (If available)	2. MARK 'X' a. TESTING REQUIRED	2. MARK 'X' b. BELIEVED PRESENT	2. MARK 'X' c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	3. EFFLUENT a. MAXIMUM DAILY VALUE (2) MASS	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (If available) (1) CONCENTRATION	3. EFFLUENT b. MAXIMUM 30 DAY VALUE (If available) (2) MASS	3. EFFLUENT c. LONG TERM AVRG. VALUE (If available) (1) CONCENTRATION	3. EFFLUENT c. LONG TERM AVRG. VALUE (If available) (2) MASS	3. EFFLUENT d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) b. NO. OF ANALYSES
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
22B. 1,4-Dichlorobenzene (106-46-7)			X							2					0
23B. 3,3'-Dichlorobenzidine (91-94-1)			X							2					0
24B. Diethyl Phthalate (84-66-2)			X							2					0
25B. Dimethyl Phthalate (131-11-3)			X							2					0
26B. Di-N-Butyl Phthalate (84-74-2)			X							2					0
27B. 2,4-Dinitrotoluene (121-14-2)			X							2					0
28B. 2,6-Dinitrotoluene (606-20-2)			X							2					0
29B. Di-N-Octyl Phthalate (117-84-0)			X							2					0
30B. 1,2-Diphenylhydrazine *(as Azobenzene)* (122-66-7)			X							2					0
31B. Fluoranthene (206-44-0)			X							2					0
32B. Fluorene (86-73-7)			X							2					0
33B. Hexachlorobenzene (118-74-1)			X							2					0
34B. Hexachlorobutadiene (87-68-3)			X							2					0
35B. Hexachlorocyclopentadiene (77-47-4)			X							2					0
36B. Hexachloroethane (67-72-1)			X							2					0
37B. Indeno *(1,2,3-cd)* Pyrene (193-39-5)			X							2					0
38B. Isophorone (78-59-1)			X							2					0
39B. Naphthalene (91-20-3)			X							2					0
40B. Nitrobenzene (98-95-3)			X							2					0
41B. N-Nitrosodimethylamine (62-75-9)			X							0					0
42B. N-Nitrosodi-N-Propylamine (621-64-7)			X							2					0

PM 30000905

CONTINUED FROM THE FRONT

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK "X" a. BELIEVED PRESENT	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	a. MAXIMUM DAILY VALUE (2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	b. MAXIMUM 30 DAY VALUE (if available) (2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	c. LONG TERM AVRG. VALUE (if available) (2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	4. UNITS b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (2) MASS	5. INTAKE (optional) b. NO. OF ANALYSES
GC/MS FRACTION – BASE/NEUTRAL COMPOUNDS *(continued)*															
43B. N-Nitrosodiphenylamine (86-30-6)			X							2					0
44B. Phenanthrene (85-01-8)			X							2					0
45B. Pyrene (129-00-0)			X							2					0
46B. 1,2,4 - Trichlorobenzene (120-82-1)			X							2					0
GC/MS FRACTION – PESTICIDES															
1P. Aldrin (309-00-2)			X							2					0
2P. α-BHC (319-84-6)			X							2					0
3P. β-BHC (319-85-7)			X							2					0
4P. γ-BHC (58-89-9)			X							2					0
5P. δ-BHC (319-86-8)			X							2					0
6P. Chlordane (57-74-9)			X							2					0
7P. 4,4'-DDT (50 29-3)			X							2					0
8P. 4,4'-DDE (72-55-9)			X							2					0
9P. 4,4'-DDD (72-54-8)			X							2					0
10P. Dieldrin (60-57-1)			X							2					0
11P. α-Endosulfan (115-29-7)			X							2					0
12P. β-Endosulfan (115-29-7)			X							2					0
13P. Endosulfan Sulfate (1031-07-8)			X							2					0
14P. Endrin (72-20-8)			X							2					0
15P. Endrin Aldehyde (7421-93-4)			X							2					0
16P. Heptachlor (76-44-8)			X							2					0

PW 30000906

CONTINUED FROM PAGE V-8

1. POLLUTANT AND CAS NUMBER (if available)	2. MARK 'X' a. TESTING REQUIRED	b. BELIEVED PRESENT	c. BELIEVED ABSENT	3. EFFLUENT a. MAXIMUM DAILY VALUE (1) CONCENTRATION	(2) MASS	b. MAXIMUM 30 DAY VALUE (if available) (1) CONCENTRATION	(2) MASS	c. LONG TERM AVRG. VALUE (if available) (1) CONCENTRATION	(2) MASS	d. NO. OF ANALYSES	4. UNITS a. CONCENTRATION	b. MASS	5. INTAKE (optional) a. LONG TERM AVERAGE VALUE (1) CONCENTRATION	(2) MASS	b. NO. OF ANALYSES
GC/MS FRACTION – PESTICIDES (continued)															
17P. Heptachlor Epoxide (1024-57-3)			X							2					
18P. PCB-1242 (53469-21-9)			X							2					
19P. PCB-1254 (11097-69-1)			X							2					
20P. PCB-1221 (11104-28-2)			X							2					
21P. PCB-1232 (11141-16-5)			X							2					
22P. PCB-1248 (12672-29-6)			X							2					
23P. PCB-1260 (11096-82-5)			X							2					
24P. PCB-1016 (12674-11-2)			X							2					
25P. Toxaphene (8001-35-2)			X							2					

PW 30000907

Please print or type in the unshaded areas only

EPA ID Number *(copy from Item I of Form 1)*: WAD000756940

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

Form 2F NPDES

United States Environmental Protection Agency
Washington, DC 20460

Application for Permit To Discharge Stormwater Discharges Associated with Industrial Activity

Paperwork Reduction Act Notice

Public reporting burden for this application is estimated to average 28.6 hours per application, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate, any other aspect of this collection of information, or suggestions for improving this form, including suggestions which may increase or reduce this burden to: Chief, Information Policy Branch, PM-223, U.S. Environmental Protection Agency, 401 M St., SW, Washington, DC 20460, or Director, Office of Information and Regulatory Affairs, Office of Management and Budget, Washington, DC 20503.

I. Outfall Location

For each outfall, list the latitude and longitude of its location to the nearest 15 seconds and the name of the receiving water.

A. Outfall Number *(list)*	B. Latitude			C. Longitude			D. Receiving Water *(name)*
001	47	22	11	120	08	16	Columbia River

II. Improvements

A. Are you now required by any Federal, State, or local authority to meet any implementation schedule for the construction, upgrading or operation of wastewater treatment equipment or practices or any other environmental programs which may affect the discharges described in this application? This includes, but is not limited to, permit conditions, administrative or enforcement orders, enforcement compliance schedule letters, stipulations, court orders, and grant or loan conditions. NO

1. Identification of Conditions, Agreements, Etc.	2. Affected Outfalls		3. Brief Description of Project	4. Final Compliance Date	
	number	source of discharge		a. req.	b. proj.

B. You may attach additional sheets describing any additional water pollution (or other environmental projects which may affect your discharges) you now have under way or which you plan. Indicate whether each program is now under way or planned, and indicate your actual or planned schedules for construction.

III. Site Drainage Map

Attach a site map showing topography (or indicating the outline of drainage areas served by the outfall(s) covered in the application if a topographic map is unavailable) depicting the facility including: each of its intake and discharge structures; the drainage area of each storm water outfall; paved areas and buildings within the drainage area of each storm water outfall, each known past or present areas used for outdoor storage or disposal of significant materials, each existing structural control measure to reduce pollutants in storm water runoff, materials loading and access areas, areas where pesticides, herbicides, soil conditioners and fertilizers are applied; each of its hazardous waste treatment, storage or disposal units (including each area not required to have a RCRA permit which is used for accumulating hazardous waste under 40 CFR 262.34); each well where fluids from the facility are injected underground; springs, and other surface water bodies which receive storm water discharges from the facility.

PW 30000908

Continued from the Front

IV. Narrative Description of Pollutant Sources

A. For each outfall, provide an estimate of the area (include units) of impervious surfaces (including paved areas and building roofs) drained to the outfall, and an estimate of the total surface area drained by the outfall.

Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)	Outfall Number	Area of Impervious Surface (provide units)	Total Area Drained (provide units)
001	13,800 Sq. Ft.	21,700 Sq. Ft.			

B. Provide a narrative description of significant materials that are currently or in the past three years have been treated, stored or disposed in a manner to allow exposure to storm water; method of treatment, storage, or disposal; past and present materials management practices employed, in the last three years, to minimize contact by these materials with storm water runoff; materials loading and access areas; and the location, manner, and frequency in which pesticides, herbicides, soil conditioners, and fertilizers are applied.

DURING PAST THREE YEARS:

Coke, wood chips, quartz rock, coal are stored uncovered in the raw materials storage area as noted on the Site Plan. There is little or no surface runoff to the Columbia River from this area.

98% Silicon and 75% Ferrosilicon products are stored mostly covered in the area noted on the Site Plan; some is uncovered. There is no surface runoff to the Columbia River from this area.

Fume (baghouse dust) slurry ponds and piles of dried fume (uncovered) are in the areas shown on the Site Plan. There is no surface runoff to the Columbia River from this area.

Furnace liners and some plant trash is piled and filled uncovered in the solid waste disposal area shown on the Site Plan. Putrescible garbage is disposed at local landfill, not in this area. There is no surface runoff to the Columbia River from this area.

No pesticides, herbicides, soil conditioners or fertilizers have been applied to these area. One catch basin in Area PR may be considered a dry well but presently appears to be plugged such that little or no surface runoff discharges to the ground.

C. For each outfall, provide the location and a description of existing structural and nonstructural control measures to reduce pollutants in storm water runoff; and a description of the treatment the storm water receives, including the schedule and type of maintenance for control and treatment measures and the ultimate disposal of any solid or fluid wastes other than by discharge.

Outfall Number	Treatment	List Codes from Table 2F-1
001	No treatment provided. Pollutants in storm water runoff are controlled mainly by limiting areas of facility from which storm water runoff is collected and discharged into outfall.	

V. Nonstormwater Discharges

A. I certify under penalty of law that the outfall(s) covered by this application have been tested or evaluated for the presence of nonstormwater discharges, and that all nonstormwater discharges from these outfall(s) are identified in either an accompanying Form 2C or Form 2E application for the outfall.

Name and Official Title (type or print)	Signature	Date Signed

B. Provide a description of the method used, the date of any testing, and the onsite drainage points that were directly observed during a test.

Outfall 001 effluent consists of non-contact cooling water and a small amount of storm water runoff. One sample of outfall 001 effluent was collected November 21, 1988 during a storm. This sample was tested for priority pollutant metals, total cyanide and total phenol. Compared to other effluent samples in August 1988, the November 21 effluent sample had more chromium (0.017 ppm versus <0.003 ppm) and more zinc (0.011 ppm versus 0.002 ppm) than the August dry weather samples. Other parameters were equivalent and most were not detected.

VI. Significant Leaks or Spills

Provide existing information regarding the history of significant leaks or spills of toxic or hazardous pollutants at the facility in the last three years, including the approximate date and location of the spill or leak, and the type and amount of material released.

None

PW 30000909

EPA ID Number *(copy from Item I of Form 1)*
WAD000756940

VII. Discharge Information

A,B,C, & D: See instructions before proceeding. Complete one set of tables for each outfall. Annotate the outfall number in the space provided. Tables VII-A, VII-B, and VII-C are included on separate sheets numbered VII-1 and VII-2.

E: Potential discharges not covered by analysis - Is any pollutant listed in Table 2F-2 a substance or a component of a substance which you currently use or manufacture as an intermediate or final product or byproduct?

[X] Yes *(list all such pollutants below)* [ ] No *(go to Section IX)*

~~Chlorine~~
Oil and grease
Sulfate
Aluminum
Iron
Tin
titanium

VIII. Biological Toxicity Testing Data

Do you have any knowledge or reason to believe that any biological test for acute or chronic toxicity has been made on any of your discharges or on a receiving water in relation to your discharge within the last 3 years?

[ ] Yes *(list all such pollutants below)* [X] No *(go to Section IX)*

IX. Contract Analysis Information

Were any of the analyses reported in Item V performed by a contract laboratory or consulting firm?

[X] Yes *(list the name, address, and telephone number of, and pollutants analyzed by, each such laboratory or firm below)* [ ] No *(go to Section X)*

A. Name	B. Address	C. Area Code & Phone No.	D. Pollutants Analyzed
Lauchs Testing Laboratories, Inc.	940 South Harney St. Seattle, WA 98108	(206)767-5060	Priority Polutants and other hazardous substances.
AM Test, Inc.	14603 NE 87th St Redmond, WA 98052	(206)885-1664	Priority Pollutant metals/elements, cyanide, phenol

X. Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

A. Name & Official Title *(type or print)*	B. Area Code and Phone No.
C. Signature	D. Date Signed

PW 30000910

EPA ID Number *(copy from item I of Form 1)*
WAD 000756940

Form Approved. OMB No. 2040-0086
Approval expires 5-31-92

VII. Discharge Information *(Continued from page 3 of Form 2F)*

Part A - You must provide the results of at least one analysis for every pollutant in this table. Complete one table for each outfall. See instructions for additional details.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite		
Oil and Grease						
Biological Oxygen Demand (BOD5)	These parameters not					
Chemical Oxygen Demand (COD)	presently monitored, but					
Total Suspended Solids (TSS)	would be willing to sample					
Total Kjeldahl Nitrogen	and test if required					
Nitrate plus Nitrite Nitrogen						
Total Phosphorus						
pH	Minimum	Maximum	Minimum	Maximum		

Part B - List each pollutant that is limited in an effluent guideline which the facility is subject to or any pollutant listed in the facility's NPDES permit for its process wastewater (if the facility is operating under an existing NPDES permit). Complete one table for each outfall. See the instructions for additional details and requirements.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Outfall 001 Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite		
PH		7.8		7.4		Intake piping and
Temperature		76 F		72.2 F		storm water runoff

The values above are from effluent monitoring during last five (5) years and are not first 30 minute nor flow weighted composite values

PW 30000911

Part C - List each pollutant shown in Tables 2F-2, 2F-3, and 2F-4 that you know or have reason to believe is present. See the instructions for additional details and requirements. Complete one table for each outfall.

Pollutant and CAS Number *(if available)*	Maximum Values *(include units)*		Average Values *(include units)*		Number of Storm Events Sampled	Outfall 001 Sources of Pollutants
	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite	Grab Sample Taken During First 30 Minutes	Flow-weighted Composite		

Results of testing Outfall 001 (non-contact cooling water and small amount of storm water runoff)

Pollutants	CAS Number	Maximum value, ppm	Number of Storm Events Sampled	Source of Pollutants
Arsenic	7440-38-2	0.004	1	Intake, piping or storm water runoff
Chromium	7440-47-3	0.017	1	Intake, piping or storm water runoff
Copper	7440-50-8	0.089	1	Intake, piping or storm water runoff
Lead	7439-92-1	nd	1	Intake, piping or storm water runoff
Nickel	7440-02-0	0.008	1	Intake, piping or storm water runoff
Zinc	7440-66-6	0.011	1	Intake, piping or storm water runoff

Note: These values are for grab samples but not first 30 minute samples nor flow weighted composites.

Part D - Provide data for the storm event(s) which resulted in the maximum values for the flow weighted composite sample.

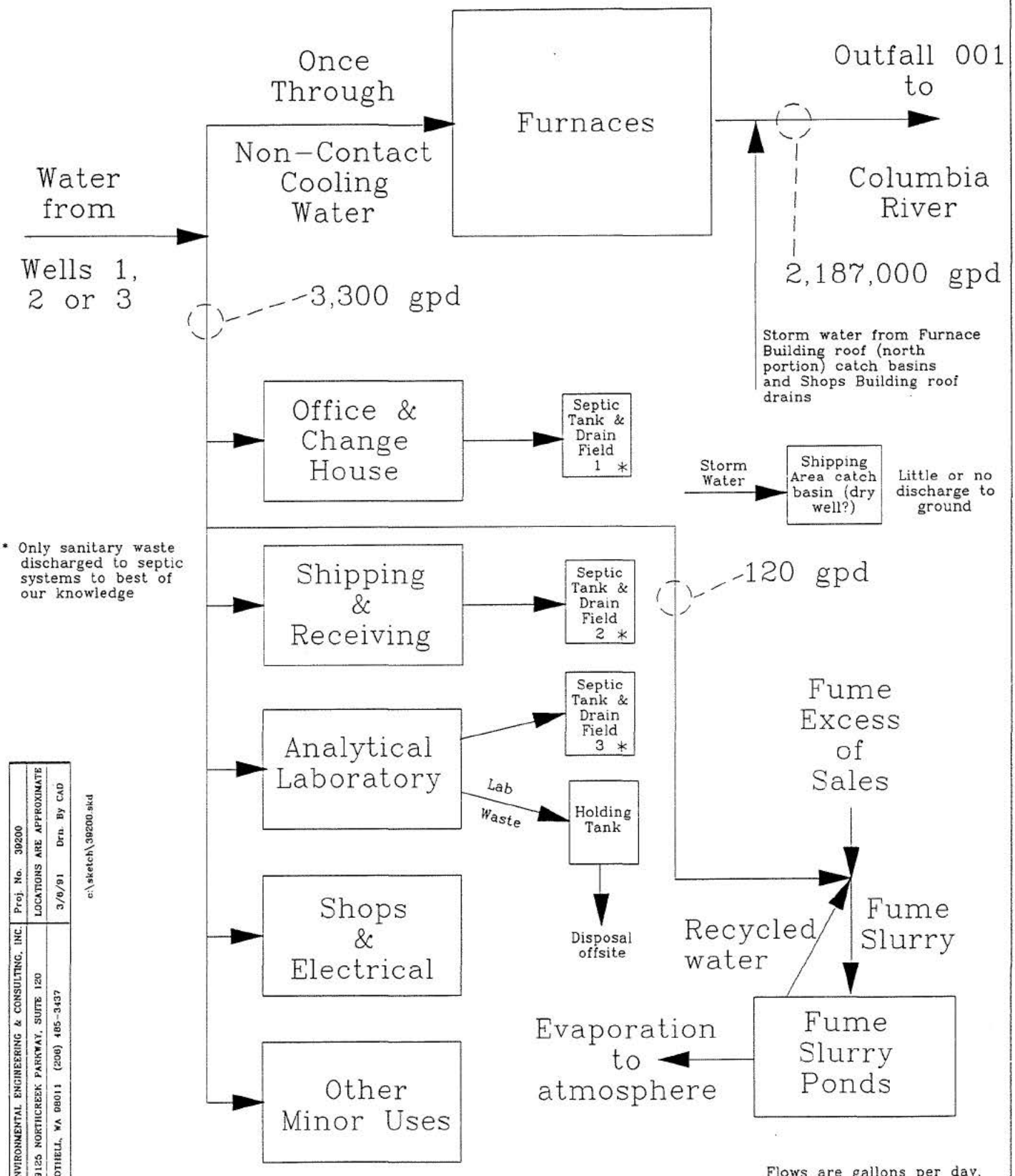
1. Date of Storm Event	2. Duration of Storm *(in minutes)*	3. Total rainfall during storm event *(in inches)*	4. Number of hours between beginning of storm measured and end of previous measurable rain event	5. Maximum floe rate during rain event *(gallons/minute or specify units*	6. Total flow from rain event *(gallons or specify units)*	7. Season sample was taken	8. Form of Precipitation *(rainfall, snowmelt)*
Nov. 21 1988	810	0.12	37.5	Not Calculated	Not Calculated	Fall	Rainfall

Above storm event recorded at Wenatchee, WA. Sample of outfall 001 effluent collected this date and results are discussed in section V.B. Sample was collected at 16:30, 1.5 hours before end of above recorded storms event.

9. Provide a description of the method of flow measurement or estimate.

PW 30000912

Schematic of Water Flow
Silicon Metaltech, Inc.
Rock Island, WA



ENVIRONMENTAL ENGINEERING & CONSULTING, INC.
19125 NORTHCREEK PARKWAY, SUITE 120
BOTHELL, WA 98011 (206) 485-3437

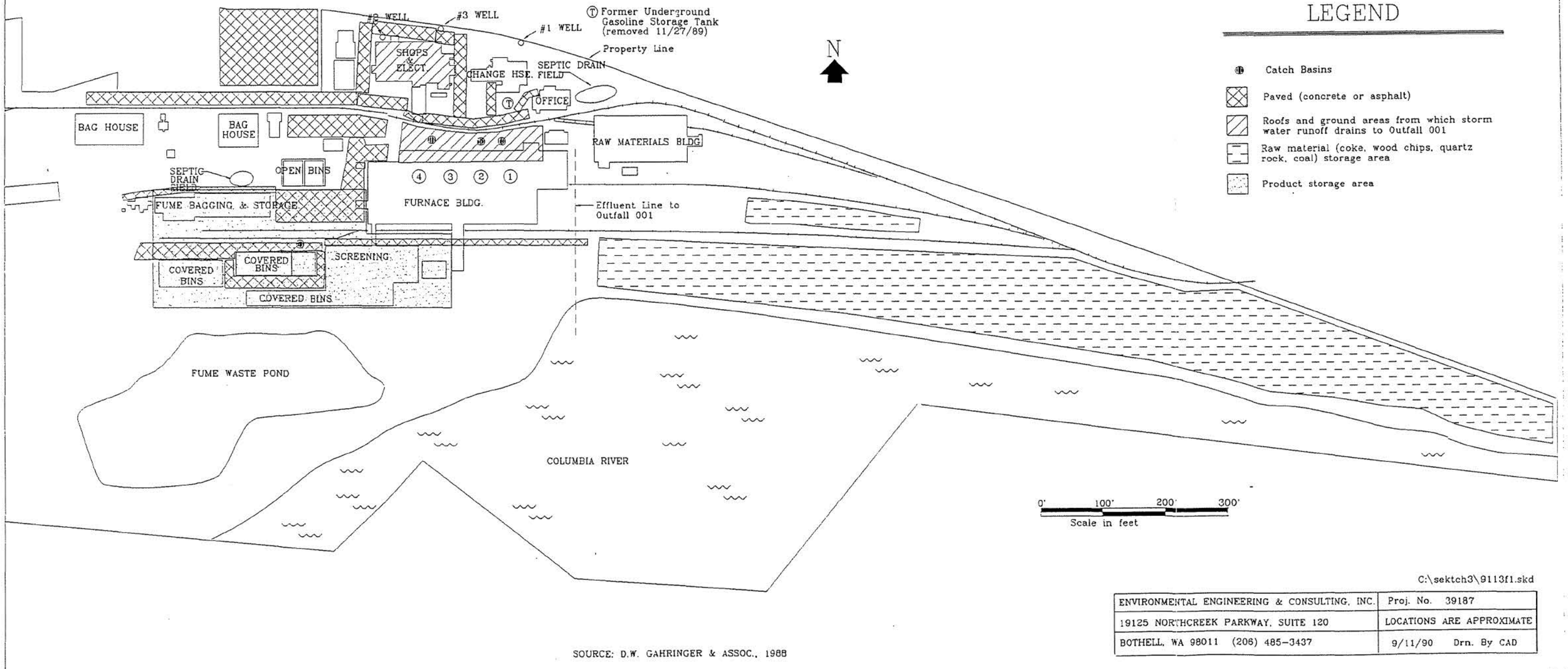
Proj. No. 39200
LOCATIONS ARE APPROXIMATE
3/6/91 Drn. By CAD

c:\sketch\39200.skd

PW 30000913

Match Line

Site Plan
Silicon Metaltech, Inc.
Rock Island, WA



LEGEND

- Catch Basins
- Paved (concrete or asphalt)
- Roofs and ground areas from which storm water runoff drains to Outfall 001
- Raw material (coke, wood chips, quartz rock, coal) storage area
- Product storage area

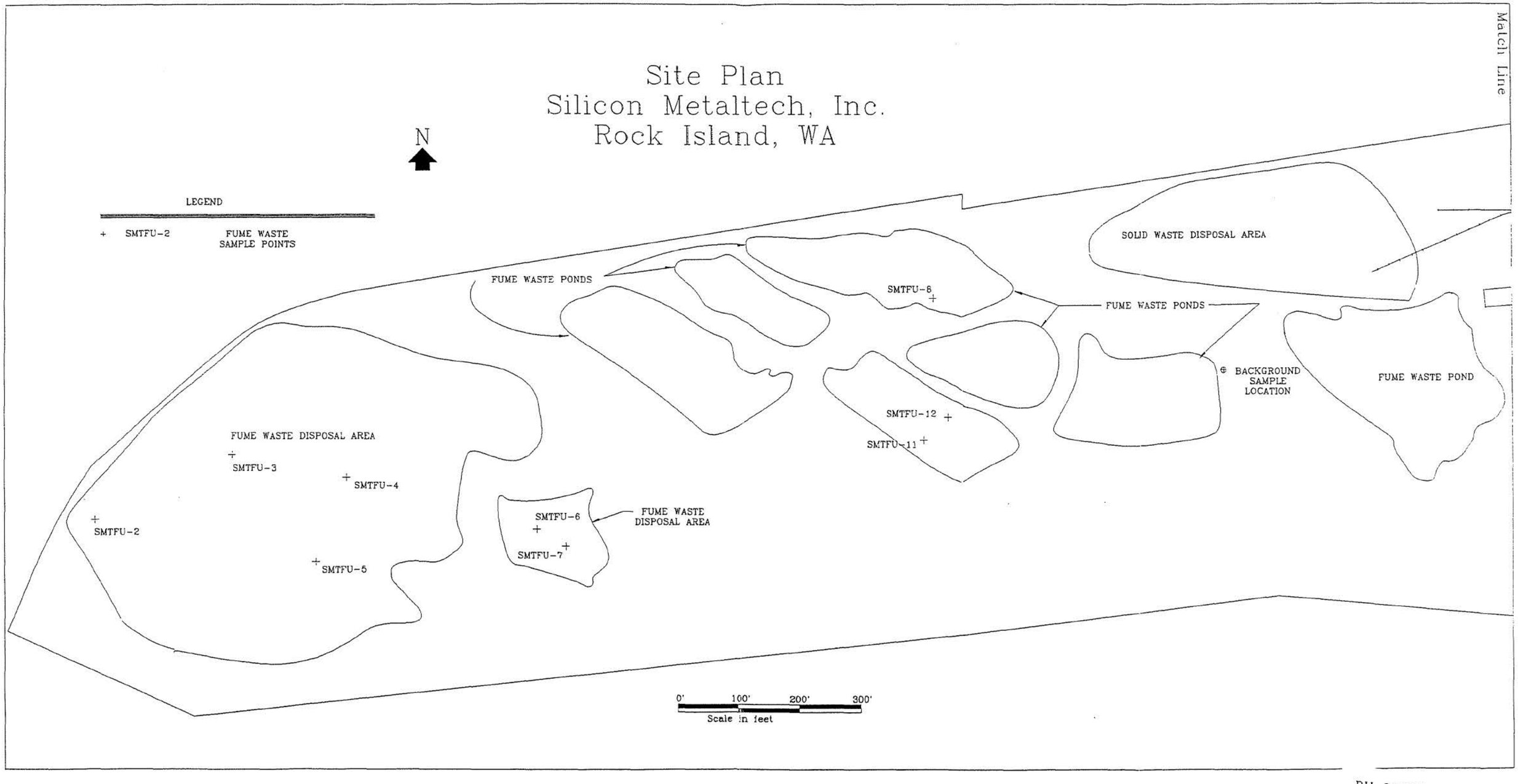
SOURCE: D.W. GAHRINGER & ASSOC., 1988

C:\sektch3\9113f1.skd

ENVIRONMENTAL ENGINEERING & CONSULTING, INC.	Proj. No. 39187
19125 NORTHCREEK PARKWAY, SUITE 120	LOCATIONS ARE APPROXIMATE
BOTHELL, WA 98011 (206) 485-3437	9/11/90 Drn. By CAD

PW 30000914

Site Plan
Silicon Metaltech, Inc.
Rock Island, WA



PW 30000915

monitoring period reported

		flow, gpd		pH		temp, F	
Start	End	avg	max	avg	max	avg	max
01-Jun-90	01-Jan-91	1,663,412	2,771,814	7.4	7.7	73	74
01-Jan-90	01-Jul-90	2,207,097	2,987,432	7.5	7.6	73	75
01-Jul-89	01-Jan-90	1,884,368	2,881,056	7.5	7.8	73	75
01-Jan-89	30-Jun-89	1,449,461	1,898,838	7.5	7.7	74	75
30-Jun-88	01-Jan-89	2,511,969	2,685,393	7.45	7.5	75.2	76
01-Jan-88	30-Jun-88	2,701,855	2,875,354	7.5	7.6	74	75
03-Aug-87	01-Jan-88	2,125,688	2,852,709	7.3	7.4	72	73
06-Jan-87	02-Jul-87	2,247,357	2,247,357	7.2	7.4	71	72
03-Aug-86	06-Jan-87	2,422,670	2,498,361	7.2	7.3	69	73
01-Jan-86	02-Jul-86	2,660,761	2,971,500	7.2	7.2	68	72
	Maximum		2,987,432		7.8		76.0
	Average	2,187,464		7.4		72.2	

period report 5 years

PW 30000916

DSHS report on Rock Island wells & water quality

C:\reports\229r.wr1

Richard J. Thompson
Acting Secretary

XXXXXXXXXXXXX
Secretary
XXXXX

STATE OF WASHINGTON

DEPARTMENT OF SOCIAL AND HEALTH SERVICES

West 924 Sinto Avenue, L32-4 • Spokane, Washington 99201-2595 • (509) 456-3115

April 6, 1989

The Honorable Clyde Ballard
Washington State Representative
410 Legislative Building, AS-33
Olympia WA 98504

Re: Water Quality Report and Results for Drinking Water at Rock Island

Dear Representative Ballard:

As the result of reported high levels of metals from the Rock Island wells, a great deal of follow-up sampling has been done by our department and Rock Island with samples being analyzed in the state lab as well as some in certified private labs. Water from the Rock Island system was also checked for pesticides and volatile organic chemicals

All of the re-samples and results to date have not confirmed the first results that were reported from the uncertified lab that did the initial analysis. Recent results given the town by phone indicate no metals were found in the fish samples that were checked.

To stay on top of this issue and hopefully ease some citizen concern, we are recommending Rock Island continue to sample for Arsenic, Lead, Mercury, and Selenium every three months to assure there are no seasonal trends and to take another complete inorganic chemical analysis in February, 1990.

As requested, we have prepared the attached brief report covering our findings and included the sampling results for your information. We appreciate the assistance you provided as well as your patience and understanding as we worked through this difficult situation.

Sincerely,

/Tom Justus

Tom Justus, P.E.
Regional Engineer
(509) 456-2453

TJ:vw
cc: Chelan-Douglas Health District
Town of Rock Island

PW 30002670

Richard J. Thompson
Acting Secretary
[redacted]

STATE OF WASHINGTON

DEPARTMENT OF SOCIAL AND HEALTH SERVICES

West 924 Sinto Avenue, L32-4 • Spokane, Washington 99201-2595 • (509) 456-3115

April 6, 1989

The Honorable Alex W. McLean
Washington State Representative
421 House Office Building, AS-33
Olympia WA 98504

Re: Water Quality Report and Results for Drinking Water at Rock Island

Dear Representative McLean:

As the result of reported high levels of metals from the Rock Island wells, a great deal of follow-up sampling has been done by our department and Rock Island with samples being analyzed in the state lab as well as some in certified private labs. Water from the Rock Island system was also checked for pesticides and volatile organic chemicals

All of the re-samples and results to date have not confirmed the first results that were reported from the uncertified lab that did the initial analysis. Recent results given the town by phone indicate no metals were found in the fish samples that were checked.

To stay on top of this issue and hopefully ease some citizen concern, we are recommending Rock Island continue to sample for Arsenic, Lead, Mercury, and Selenium every three months to assure there are no seasonal trends and to take another complete inorganic chemical analysis in February, 1990.

As requested, we have prepared the attached brief report covering our findings and included the sampling results for your information. We appreciate the assistance you provided as well as your patience and understanding as we worked through this difficult situation.

Sincerely,

Tom Justus, P.E.
Regional Engineer
(509) 456-2453

TJ:vw
cc: Chelan-Douglas Health District
Town of Rock Island

PW 30002671

Richard J. Thompson
Acting Secretary
[illegible]

STATE OF WASHINGTON

DEPARTMENT OF SOCIAL AND HEALTH SERVICES

West 924 Sinto Avenue, L32-4 • Spokane, Washington 99201-2595 • (509) 456-3115

April 6, 1989

The Honorable George L. Sellar
Washington State Senator
312 Legislative Building, AS-32
Olympia WA 98504

Re: Water Quality Report and Results for Drinking Water at Rock Island

Dear Senator Sellar:

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Sincerely,

Tom Justus, P.E.
Regional Engineer
(509) 456-2453

TJ:vw
cc: Chelan-Douglas Health District
Town of Rock Island

PW 30002672

ROCK ISLAND, WASHINGTON
SUMMARY REPORT
MARCH, 1989

SUMMARY

The town of Rock Island submitted water samples to National Chem Lab in February for inorganic analyses due to concern over the location and operation of the Douglas County landfill as well as a proposal to dispose of sewage treatment sludge from Wenatchee at airport property near Pangborn Field. Preliminary results from the lab showed high levels of mercury (1.5 parts per million), lead, arsenic, and selenium. Final results reported from the lab showed mercury levels just below the Maximum Contaminant Level (MCL) of 0.002 ppm, but levels of arsenic, cadmium, chromium, iron, and selenium above the MCL. National Chem Lab currently is not certified. The Chelan-Douglas Health Department collected another set of samples and sent them to the DSHS State laboratory. The DSHS lab did not confirm the previous results. Additional water samples were collected from 13 wells and a pond on February 23, 1989 by DSHS personnel and analyzed at the DSHS lab. All results were under state and federal drinking water standards. The town of Rock Island sent an additional set of samples to ABC Laboratories and the DSHS Pesticide lab. All these results were also under levels set by state and federal drinking water standards.

INTRODUCTION

Rock Island is located in central Washington, approximately 20 miles southeast of Wenatchee (Figure 1). The geology of the area mainly consists of glacial, fluvial and volcanic rocks. The most recent materials are glacio-fluvial deposits of the two prominent terraces in the area, and stream deposits. The upper terrace is composed of coarse sand to gravel and boulders. The lower terrace is composed of sand and gravel, and cobbles and boulders of predominantly granitic and metamorphic composition. Basalt of the Columbia River Basalt Group crops out along the north side of the river and in the river. Basalt has been penetrated by wells in the eastern end of the area. The general direction of groundwater flow is southeast.

Washington State University (WSU) collected samples in Rock Island in September 1978 and April 1979 as part of a three year study to investigate water quality in the Rock Island area at the request of the Chelan County PUD. As a result of this study, the Chelan-Douglas Health Department informed

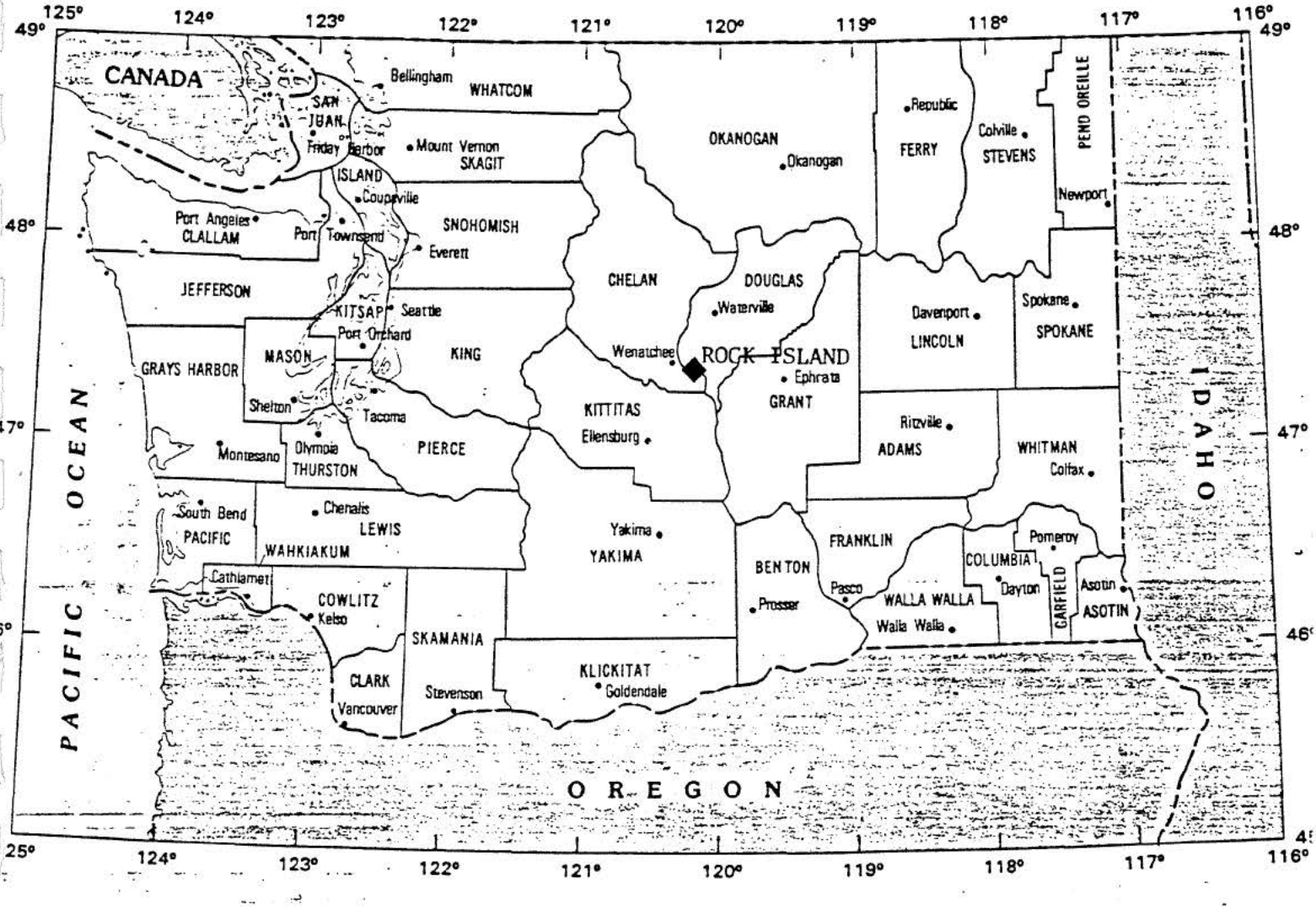

Figure 1. General location map.

PW 30002674

DOE in July, 1980, that concentrations of arsenic and selenium had been detected in groundwater and surface waters and that two well water samples exceeded "Washington State Standards". Because the levels of arsenic and selenium posed possible environmental problems and health hazards, both DOE and DSHS became involved. Samples were collected on August 8, 1980 by DOE and WSU personnel. One surface water and eleven well samples were collected in and around Rock Island. In addition, two samples were collected from Hanna Mining Company (now Silicon Metaltech) baghouse dust disposal system, one from a lagoon, and one from the recycled slurry. The samples were split three ways for analysis by DOE, WSU, and DSHS. Soil samples were also collected and analyzed by the DOE laboratory. Comparative analysis between DOE, WSU, and DSHS of water samples showed fairly close agreement. The results showed no concentrations of arsenic above the recommended drinking water levels. Two wells contained concentrations of selenium just above the drinking water standards (by DOE analysis only). Since these results were not confirmed by the other two labs, no resamples were taken. Arsenic concentrations detected in the soil samples were not above levels that have been observed in soils from orchards where arsenic was used as a pesticide. Concentrations of arsenic, selenium, lead, cadmium and mercury in the Hanna Lagoon and Hanna Lagoon Influent samples were all high.

As a result of the high levels detected in the lagoons, two observation wells were established around the lagoons and samples were collected periodically in 1982. Hanna also monitored a control well for the same period and agreed to do optional sampling of the Columbia River. Nothing was detected in any of these samples.

The town of Rock Island has been conducting routine monitoring of the city wells as required under the Safe Drinking Water Act. All samples have been within set drinking water standards. However, concern over the proposal to dispose of sludge near Pangborn Field prompted the town to submit samples to an uncertified lab that subsequently reported high levels of arsenic, cadmium, chromium, iron, and selenium in city wells. DSHS and the Chelan-Douglas Health Department became involved after these results were reported.

SAMPLING METHODOLOGY

Samples were collected February 23, 1989 in the Rock Island area by DSHS personnel (Figure 2). Sampling procedures were conducted as described in the Hazardous Waste Drinking Water Program (HWDWP) Field Protocol. All samples were analyzed for arsenic, lead, mercury, and selenium at the DSHS laboratory.

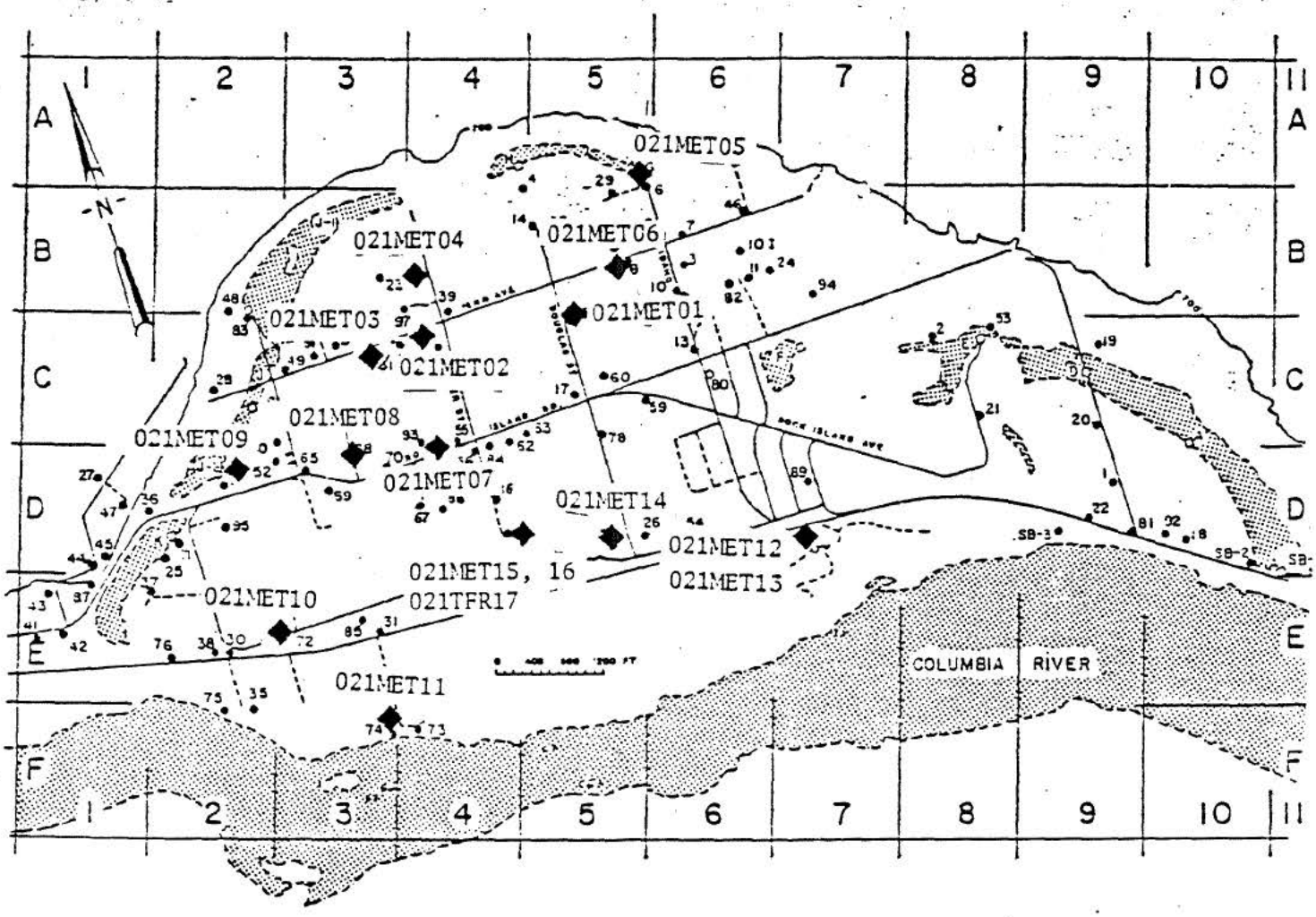

Figure 2. DSHS sample locations.

◆ - well site

RESULTS AND DISCUSSION

Final results from National Chem Lab for samples collected in early February are as follows (in ppm):

	Well #2	Well #3	Town Hall	MCL
Arsenic	--	0.187	--	0.05
Cadmium	0.075	0.038	0.051	0.01
Chromium	0.981	<0.001	0.086	0.05
Iron	0.066	7.02	0.080	0.30
Lead	0.271	0.268	0.266	0.05
Mercury	0.0019	0.0019	0.0016	0.002
Selenium	0.602	1.015	0.425	0.01

Results from the DSHS State Lab for samples collected by the Chelan-Douglas Health Department February 10 are as follows (in ppm):

	Well #2	Well #3	MCL
Arsenic	<0.010	0.021	0.05
Cadmium	<0.002	<0.002	0.01
Chromium	<0.010	<0.010	0.05
Lead	<0.002	<0.010	0.05
Mercury	0.0028*	0.0005	0.002
Selenium	<0.005	<0.005	0.01

*Note: These samples were collected in non acid-rinsed cubitainers. Mercury is a fairly common contaminant. Whenever mercury is positive, a resample is collected in an acid rinsed container.

Results from the DSHS State Lab for samples collected February 23 indicated all samples were less than the detection limit for mercury (0.0005 ppm), lead (0.002 ppm), and selenium (0.005 ppm). Arsenic was detected in five wells and in the surface sample, but all were below the MCL of 0.05 ppm. All samples were collected in acid rinsed containers.

Sample	Arsenic (ppm)
021MET02 (City #3)	0.017
021MET03 (Holloway)	0.014
021MET05 (Pond)	0.036
021MET06 (Private)	0.024
021MET07 (Private)	0.014
021MET09 (Private)	0.017

The town of Rock Island collected samples from wells #2 and 3 on February 17. These samples were sent to ABC Laboratories and complete inorganic chemical analyses were performed. All results were below the MCL, except iron and turbidity in well #3. Some arsenic was detected in well #3 (0.016 ppm - below the MCL). Wells #2 and 3 were sampled again on February 21 and sent to ABC Laboratories for a Volatile Organic Scan and to the DSHS Pesticide lab for pesticide scans. Nothing was detected in any of these samples.

Copies of all laboratory results are in Appendix 1.

CONCLUSIONS AND RECOMMENDATIONS

Samples collected by Health Department and DSHS personnel and analyzed at the DSHS State lab indicted no health concerns with the drinking water at this time. Although one well showed mercury levels just above the MCL, this was most likely due to the type of container the sample was collected in. A subsequent sample indicted mercury levels below the detection limit.

It is recommended that the town of Rock Island monitor for arsenic, lead, mercury, and selenium every three months for the next year and resample for complete inorganics in February, 1990 to assure residents that the drinking water meets drinking water standards.

APPENDIX 1

#3

*** NATIONAL CHEM LAB TEST REPORT ***

City of Rock Island
P.O. Box 99
5 N. Garden
Rock Island, WA 98850
Attn: Robert Knight Jr.

February 10, 1989

Invoice #1057

Purchase Order #8686

NCL #031.001

Sample I.D.: WATER

Analysis Requested	Result	* MCL
Coliform	2.2 MPN/100 ml	12.2
Nitrate Nitrogen	1.5 mg/L	10.0
Total Phosphate	.545 mg/L	
Arsenic	0.167 mg/L	0.05
Cadmium	0.078 mg/L	0.01
Calcium	56.1 mg/L	
Chromium	<0.001 mg/L	0.05
Iron	7.02 mg/L	0.3
Lead	0.262 mg/L	0.05
Manganese	<0.001 mg/L	0.05
Mercury	0.0015 mg/L	0.002
Selenium	1.015 mg/L	0.01
Silver	<.001 mg/L	0.05
Sodium	26.3 mg/L	
Copper	0.195 mg/L	1.3
Zinc	<0.001 mg/L	5.0

* MAXIMUM CONTAMINATE LEVEL

Analyst Signature _____

PW 30002680

NATIONAL CHEM TEC
Water Test Report

Date: 02/14/89
Time: 11:55

NCL#: WE9021302

INVOICE #W9BD02

CITY OF ROCK ISLAND

SAMPLE #: TOWN HALL

LOT #:

PO #: 8888

COMMENT:

DATE RECVD: 02/09/89 TIME RECVD: 10:00 RECVD BY: MICKEY HUNACEK

TRANSPORTATION MODE: CUSTOMER DELIVER

SAMPLE SOURCE: TOWN HALL

SAMPLE SIZE: 1 QUART

CONTAINER TYPE: GLASS

DELIVERED BY: MR. WHITE

TEST	MCL	RESULTS	DATE ANALYZED	TIME ANALYZED	CHEMIST
COLIFORM BACTERIA		2.2 MPN/100ml	02/13/89		MICKEY HUNACEK
NITRATE (AS)		3.9 mg/L	02/13/89		MICKEY HUNACEK
PHOSPHATE TOTAL (AS)		.132 mg/L	02/13/89		MICKEY HUNACEK
ZINC		<.001 mg/L	02/13/89		MICKEY HUNACEK
CADMIUM	0.010	0.001 mg/L	02/13/89		MICKEY HUNACEK
CALCIUM		52.9 mg/L	02/13/89		MICKEY HUNACEK
MERCURY	0.002	0.0016 mg/L	02/13/89		MICKEY HUNACEK
SILVER	0.050	<.001 mg/L	02/13/89		MICKEY HUNACEK
CHROMIUM	0.050	0.006 mg/L	02/13/89		MICKEY HUNACEK
LEAD	0.050	0.265 mg/L	02/13/89		MICKEY HUNACEK
IRON	0.300	0.080 mg/L	02/13/89		MICKEY HUNACEK
MANGANESE	0.050	<.001 mg/L	02/13/89		MICKEY HUNACEK
SELENIUM	0.010	0.423 mg/L	02/13/89		MICKEY HUNACEK
SODIUM		21.3 mg/L	02/13/89		MICKEY HUNACEK
COPPER		<.001 mg/L	02/13/89		MICKEY HUNACEK
NICKEL		1.24 mg/L	02/13/89		MICKEY HUNACEK

PW 30002681

DO NOT WRITE IN SHADED AREAS

PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 02.10.89 | COLLECTED BY: Bob Knight Jr 884-1261

SYSTEM I.D. NO.: 73401E | SYSTEM NAME: Rock Island | SYSTEM CLASS (circle one): (1) 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ✓1. Well ___2. Spring ___4. Purchase | SOURCE NO. (Well No.): 02 | IF SOURCE IS LAKE OR STREAM ENTER NAME

IF SAMPLE WAS TAKEN: ✓ Before Treatment ___ After Treatment | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address) Center St Well #2

TAKEN AFTER TREATMENT WAS IT ___FILTERED ___FLUORIDATED ___CHLORINATED ___WATER SOFTENER: TYPE USED ___

REMARKS: (Water quality problems, address for additional copies, etc.)

As, Se, Pb, Hg only
Rush Please
Phone Results to
ANN JENSEN 509-664-5310

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Steven Houck, Clerk
Signature (Required) (Print Full Name & Address)
City of Rock Island
Name
P.O. Box 99
Street
Rock Island WA 98850
City Zip Code
Telephone: 509 ; 884-1261
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS		*MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
anic	As	0.05*	<	0.010	mg/l	✓		PO
n	Ba	1.0*			mg/l			
mium	Cd	0.01*	<	0.002	mg/l	✓		PO
nium	Cr	0.05*	<	0.010	mg/l	✓		PO
	Fe	0.3			mg/l			
	Pb	0.05*	<	0.002	mg/l	✓		PO
anese	Mn	0.05			mg/l			
cury	Hg	0.002*		0.0028	mg/l	✓		MH
ium	Se	0.01*	<	0.005	mg/l	✓		[illegible]
ver	Ag	0.05*			mg/l			
m	Na				mg/l			
rdness					mg/l AS CaCO3			
uctivity		700			Micromhos/cm 25° C			
rbidity		1.0*			NTU			
r		15.0			Color Units			
uoride	F	2.0*			mg/l			
ate	NO3	10.0*			mg/l			
nde	Cl	250			mg/l			
lfate	SO4	250			mg/l			
		500			mg/l			
pper	Cu	1.0			mg/l			
	Zn	5.0			mg/l			

DATE FINAL: 2-23-89

LABORATORY SUPERVISOR (Name or Initials): J Davies

CHARGE: $113.00

REMARKS:

Cd and Cr included after discussion with Ann Jensen, 2-17-89. JD

PW 30002682

*MCL = Maximum Contaminant Level Allowed * Primary Standard

DOH 4428 Rev. 7/85) 873 DSHS Laboratory & Data Processing Copy DSHS Billing Copy Water Supplier Copy District Engineer Copy Local Health Dept. Copy

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 02.10.89 | COLLECTED BY: Bob Knight Jr 884-1261

SYSTEM I.D. NO.: 73401E | SYSTEM NAME: Rock Island | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: 1. Surface 2. Spring 3. Well 4. Purchase | SOURCE NO. (Well No.): 03 | IF SOURCE IS LAKE OR STREAM ENTER NAME:

THIS SAMPLE WAS TAKEN: Before Treatment ☐ After Treatment ☒ | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address) Penn St Well #3

* TAKEN AFTER TREATMENT WAS IT ____ FILTERED ____ FLUORIDATED ____ CHLORINATED ____ WATER SOFTENER: TYPE USED ____

REMARKS: (Water quality problems, address for additional copies, etc.)

Se, Pb, As, Hg only
Rush Please!
Phone results to
Ann Jenson 509 664 5110

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Susan Houck, clerk
Signature (Required) (Print Full Name & Address)

City of Rock Island
Name

P.O. Box 99
Street

Rock Island WA 98850
City Zip Code

Telephone: (509) 884-1261
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

[redacted] 2-2359

TESTS		*MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
ic	As	0.05*		0.021	mg/l	✓		PO
um	Ba	1.0*			mg/l			
um	Cd	0.01*	<	0.002	mg/l	✓		PO
mium	Cr	0.05*	<	0.010	mg/l	✓		PO
	Fe	0.3			mg/l			
	Pb	0.05*	<	0.010	mg/l	✓		PO
nese	Mn	0.05			mg/l			
	Hg	0.002*		.0005	mg/l	✓		PO
ium	Se	0.01*	<	0.005	mg/l	✓		PO
	Ag	0.05*			mg/l			
um	Na				mg/l			
ss					mg/l AS CaCO3			
uctivity		700			Micromhos/cm 25° C			
ty		1.0*			NTU			
		15.0			Color Units			
e	F	2.0*			mg/l			
	NO3	10.0*			mg/l			
ide	Cl	250			mg/l			
	SO4	250			mg/l			
		500			mg/l			
	B	1.0			mg/l			
	Zn	5.0			mg/l			

LABCRATORY SUPERVISOR (Name or Initials)
J Davies

CHARGE $113.00

REMARKS:

Cd and Cr included after discussion with Ann Jenson, 2-17-89.
JD

PW 30002683

* The Maximum Contaminant Level Allowed * Primary Standard

-622F Rev. 7/86) -671- DSHS Laboratory & Data Processing Copy | DSHS Billing Copy | Water Supplier Copy | District Engineer Copy | Local Health Dept. Copy

Please Print Plainly
USE HEAVY PENCIL
DO NOT WRITE IN SHADED AREAS

State of Washington
Department of Social and Health Services
Division of Health
PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

SEE BACK FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 022389 | COLLECTED BY: Patti Carter 545-2475

SYSTEM I.D. NO.: _____ | SYSTEM NAME: 021 TRP 00 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase | SOURCE NO. (Well No.) | IF SOURCE IS LAKE OR STREAM ENTER NAME

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ____FILTERED ____FLUORIDATED ____CHLORINATED ____WATER SOFTENER: TYPE USED _____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Haz. Waste Program
Name
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane WA. 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*	<	0.010	mg/l	✓		PO
Barrium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
Chromium Cr	0.05*			mg/l			
Iron Fe	0.3			mg/l			
Lead Pb	0.05*	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	0.0005	mg/l	✓		MR
Selenium Se	0.01*	<	0.005	mg/l	✓		[illegible]
Silver Ag	0.05*			mg/l			
Sodium Na				mg/l			
Hardness				mg/l AS CaCO3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
Color	15.0			Color Units			
Fluoride F	2.0*			mg/l			
Nitrate NO3	10.0*			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO4	250			mg/l			
TDS	500			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR
(Name or Initials)
Davies

CHARGE: $79.00 To

REMARKS: HAZ. WASTE ACCOUNT

PW 30002684

NATIONAL CHEM LAB
Water Test Report

Date: 02/14/89
Time: 11:55

NCL#: WE902140[illegible]

INVOICE #W9BE01

CITY OF ROCK ISLAND

SAMPLE #: #2 WELL

LOT #:

PO #: 8686

COMMENT:

DATE RECVD: 02/09/89 TIME RECVD: 10:00 RECVD BY: MICKEY HUNACEK

TRANSPORTATION MODE: CUSTOMER DELIVER

SAMPLE SOURCE: #2 WELL

SAMPLE SIZE: 1 QUART

CONTAINER TYPE: GLASS

DELIVERED BY: MR. WHITIC

TEST	MCL	RESULTS	DATE ANALYZED	TIME ANALYZED	CHEMIST
COLIFORM BACTERIA		2.2 MPN/100ml	02/14/89		MICKEY HUNACEK
NITRATE (AS)		2.9 mg/L	02/14/89		MICKEY HUNACEK
PHOSPHATE TOTAL (AS)		0.145 mg/L	02/14/89		MICKEY HUNACEK
ZINC		0.056 mg/L	02/14/89		MICKEY HUNACEK
CADMIUM	0.010	0.075 mg/L	02/14/89		MICKEY HUNACEK
CALCIUM		37.7 mg/L	02/14/89		MICKEY HUNACEK
MERCURY	0.002	0.0019 mg/L	02/14/89		MICKEY HUNACEK
SILVER	0.050	<.001 mg/L	02/14/89		MICKEY HUNACEK
CHROMIUM	0.050	0.991 mg/L	02/14/89		MICKEY HUNACEK
LEAD	0.050	0.271 mg/L	02/14/89		MICKEY HUNACEK
IRON	0.300	0.066 mg/L	02/14/89		MICKEY HUNACEK
MANGANESE	0.050	<.001 mg/L	02/14/89		MICKEY HUNACEK
SELENIUM	0.010	0.602 mg/L	02/14/89		MICKEY HUNACEK
SODIUM		25.9 mg/L	02/14/89		MICKEY HUNACEK
COPPER		.016 mg/L	02/14/89		MICKEY HUNACEK
NICKEL		1.36 mg/L	02/14/89		MICKEY HUNACEK

Mickey Hunacek

PW 30002685

USE HEAVY PENCIL
DO NOT WRITE IN SHADED AREAS

PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

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[redacted] | DATE COLLECTED: 022389 | COLLECTED BY: Patti Carter, Telephone: Scan 545-2475

SYSTEM I.D. NO.: _____ | SYSTEM NAME: 021 MET 01 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase | SOURCE NO. (Well No.): ___ | IF SOURCE IS LAKE OR STREAM ENTER NAME:

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ___FILTERED ___FLUORIDATED ___CHLORINATED ___WATER SOFTENER: TYPE USED ___

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazard Waste Program
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA. 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05'	<	0.010	mg/l	✓		PO
Barium Ba	1.0'			mg/l			
Cadmium Cd	0.01'			mg/l			
Chromium Cr	0.05'			mg/l			
Iron Fe	0.3			mg/l			
Lead Pb	0.05'	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002'	<	.0005	mg/l	✓		
Selenium Se	0.01'	<	0.005	mg/l	✓		
Silver Ag	0.05'			mg/l			
Sodium Na				mg/l			
Hardness				mg/l AS CaCO3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0'			NTU			
Color	15.0			Color Units			
Fluoride F	2.0'			mg/l			
Nitrate NO3	10.0'			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO4	250			mg/l			
TDS	500			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR (Name or Initials)
J. Davis

CHARGE: $79.00 To HAZ. WASTE ACCT

REMARKS:

PW 30002686

MCL = the Maximum Contaminant Level Allowed ' Primary Standard

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Division of Health
PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

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FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSIS

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 022389 | COLLECTED BY: Patti Carter | Telephone: Scan 545-2475

SYSTEM I.D. NO.: | SYSTEM NAME: 021 MET 02 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase

SOURCE NO. (Well No.) | IF SOURCE IS LAKE OR STREAM ENTER NAME

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment

IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ____FILTERED ____FLUORIDATED ____CHLORINATED ____WATER SOFTENER: TYPE USED ____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazard. Waste Program
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA. 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	MCL	LESS THAN <	RESULTS	UNITS	Compliance YES ✓	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*		.017	mg/l	✓		PO
Barium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
Chromium Cr	0.05*			mg/l			
Fluoride F	0.3			mg/l			
Lead Pb	0.05*	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	.0005	mg/l	✓		[illegible]
Selenium Se	0.01*	<	0.005	mg/l	✓		[illegible]
Silver Ag	0.05*			mg/l			
Sodium Na				mg/l			
Hardness				mg/l AS CaCO3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
Color	15.0			Color Units			
Fluoride F	2.0*			mg/l			
Nitrate NO3	10.0*			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO4	250			mg/l			
	500			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR (Name or Initials)

J Davies

CHARGE $79.00 to Hz. Waste Acct

REMARKS: VCLW

PW 30002687

* The Maximum Contaminant Level Allowed * Primary Standard

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Division of Health
PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

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FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED 02 23 89 | COLLECTED BY Patti Carter Scan 545-2475

SYSTEM I.D. NO. _____ | SYSTEM NAME 021 MET 03 | SYSTEM CLASS (circle one) 1 2 3 4 | COUNTY Douglas

SOURCE TYPE: Surface ___3. Well; Spring ___4. Purchase

SOURCE NO. (Well No.) ___

IF SOURCE IS LAKE OR STREAM ENTER NAME

SAMPLE WAS TAKEN: Before Treatment; After Treatment

IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

EN AFTER TREATMENT WAS IT ___FILTERED ___FLUORIDATED
___CHLORINATED ___WATER SOFTENER: TYPE USED ___

KS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazard. Waste Program
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA. 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

	MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
As	0.05*		0.014	mg/l	✓		PO
Ba	1.0*			mg/l			
Cd	0.01*			mg/l			
Cr	0.05*			mg/l			
Fe	0.3			mg/l			
Pb	0.05*	<	0.002	mg/l	✓		PO
ese Mn	0.05			mg/l			
Hg	0.002*	<	0.0005	mg/l	✓		[illegible]
Se	0.01*	<	0.005	mg/l	✓		[illegible]
Ag	0.05*			mg/l			
Na				mg/l			
SS				mg/l AS CaCO3			
nty	700			Micromhos/cm 25° C			
tv	1.0*			NTU			
	15.0			Color Units			
ide F	2.0*			mg/l			
Mn	10.0*			mg/l			
ate	250			mg/l			
Cl	250			mg/l			
	500			mg/l			
Cu	1.0			mg/l			
Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR
(Name or Initials)
J Davis

CHARGE: $79.00 to

REMARKS: Haz. Waste Act

PW 30002688

* the Maximum Contaminant Level Allowed * Primary Standard

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PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 022389 | COLLECTED BY: Patti Carter | Telephone: Scan 545-2475

SYSTEM I.D. NO. | SYSTEM NAME: 021 MET 04 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase | SOURCE NO. (Well No.) | IF SOURCE IS LAKE OR STREAM ENTER NAME

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ____FILTERED ____FLUORIDATED ____CHLORINATED ____WATER SOFTENER: TYPE USED ____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazardous Waste Program
Office of Environmental Health Programs
West 924 Sinto Avenue (Street)
Spokane, (City) WA. 99201-2595 (Zip Code)
Telephone: (Scan) 545-2475 (Area Code)

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*	<	0.010	mg/l	✓		PO
Barium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
Chromium Cr	0.05*			mg/l			
Iron Fe	0.3			mg/l			
Lead Pb	0.05*	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	0.0005	mg/l	✓		
Selenium Se	0.01*	<	0.005	mg/l	✓		
Silver Ag	0.05*			mg/l			
Sodium Na				mg/l			
Hardness				mg/l AS CaCo3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
Color	15.0			Color Units			
Fluoride F	2.0*			mg/l			
Nitrate as N	10.0*			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO4	250			mg/l			
	500			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR (Name or Initials)
J. Davies

CHARGE: $79.00 GS

REMARKS: HAZ. WASTE ACCT

PW 30002689

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PUBLIC HEALTH LABORATORIES
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FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 02 23 89 | COLLECTED BY: Patti Carter, Phone: Scan 545-2475

SYSTEM I.D. NO.: _____ | SYSTEM NAME: 021 MET 05 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase | SOURCE NO. (Well No.) | IF SOURCE IS LAKE OR STREAM ENTER NAME

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ____FILTERED ____FLUORIDATED ____CHLORINATED ____WATER SOFTENER: TYPE USED _____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazardous Waste Program
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	*MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*		.036	mg/l	✓		PO
Barium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
Chromium Cr	0.05*			mg/l			
Iron Fe	0.3			mg/l			
Lead Pb	0.05*	<	.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	.0005	mg/l	✓		
Selenium Se	0.01*	<	0.005	mg/l	✓		
Silver Ag	0.05*			mg/l			
Sodium Na				mg/l			
Hardness				mg/l AS CaCo3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
Color	15.0			Color Units			
Fluoride F	2.0*			mg/l			
Nitrate NO3	10.0*			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO4	250			mg/l			
TDS	500			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR (Name or Initials)

J Davis

CHARGE: $79.00 TO HAZ. WASTE ACCOUNT.

REMARKS:

PW 30002690

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PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

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[redacted] | DATE COLLECTED: 022389 | COLLECTED BY: Patti Carter, Telephone: Scan 545-2475

SYSTEM I.D. NO.: _____ | SYSTEM NAME: 021 MET 06 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase | SOURCE NO. (Well No.) IF SOURCE IS LAKE OR STREAM ENTER NAME: ___ ___

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ____FILTERED ____FLUORIDATED ____CHLORINATED ____WATER SOFTENER: TYPE USED ____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazardous Waste Program
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA. 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

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TESTS	*MCL	LESS THAN	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*		.024	mg/l	✓		PO
Barium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
Chromium Cr	0.05*			mg/l			
Iron Fe	0.3			mg/l			
Lead Pb	0.05*	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	0.0005	mg/l	✓		[illegible]
Selenium Se	0.01*	<	0.005	mg/l	✓		[illegible]
Silver Ag	0.05*			mg/l			
Sodium Na				mg/l			
Hardness				mg/l AS CaCo3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
Color	15.0			Color Units			
Fluoride F	2.0*			mg/l			
Nitrate NO_3	10.0*			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO_4	250			mg/l			
TDS	500			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR (Name or Initials)
JDavies

CHARGE: $79.00 to Hg. Waste acct

REMARKS: VOAs

PW 30002691

*MCL is the Maximum Contaminant Level Allowed * Primary Standard

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PUBLIC HEALTH LABORATORIES
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WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 02 23 89 | COLLECTED BY: Patti Carter, Telephone: Scan 545-2475

SYSTEM I.D. NO.: _____ | SYSTEM NAME: 021 MET 07 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase | SOURCE NO. (Well No.) | IF SOURCE IS LAKE OR STREAM ENTER NAME

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT _____FILTERED _____FLUORIDATED _____CHLORINATED _____WATER SOFTENER: TYPE USED _____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazardous Waste Program
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA. 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	*MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*		0.014	mg/l	✓		PO
rium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
romium Cr	0.05*			mg/l			
ron Fe	0.3			mg/l			
ad Pb	0.05*	<	0.002	mg/l	✓		PO
nganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	0.0005	mg/l	✓		
enium Se	0.01*	<	0.005	mg/l	✓		
Silver Ag	0.05*			mg/l			
dium Na				mg/l			
Hardness				mg/l AS CaCO3			
nductivity	700			Micromhos/cm 25° C			
urbidity	1.0*			NTU			
or	15.0			Color Units			
oride F	2.0*			mg/l			
Nitrate NO3	10.0*			mg/l			
oride Cl	250			mg/l			
Sulfate SO4	250			mg/l			
	500			mg/l			
Copper Cu	1.0			mg/l			
Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR
(Name or Initials)
J. Davies

CHARGE: $79.00 TO HAS.

REMARKS: WASTE ACCOUNT

PW 30002692

*MCL = the Maximum Contaminant Level Allowed * Primary Standard

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FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 02 23 89 | COLLECTED BY: Patti Carter | Telephone: Scan 545-2475

SYSTEM I.D. NO.: _____ | SYSTEM NAME: 021 MET 08 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase | SOURCE NO. (Well No.): ___ | IF SOURCE IS LAKE OR STREAM ENTER NAME:

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ____FILTERED ____FLUORIDATED ____CHLORINATED ____WATER SOFTENER: TYPE USED ____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazardous Waste Program
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*	<	0.010	mg/l	✓		PO
Barium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
Chromium Cr	0.05*			mg/l			
Iron Fe	0.3			mg/l			
Lead Pb	0.05*	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	0.0005	mg/l	✓		[illegible]
Selenium Se	0.01*	<	0.005	mg/l	✓		[illegible]
Silver Ag	0.05*			mg/l			
Sodium Na				mg/l			
Hardness				mg/l As CaCO3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
Color	15.0			Color Units			
Fluoride F	2.0*			mg/l			
Nitrate NO_3	10.0*			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO_4	250			mg/l			
TDS	500			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR
(Name or Initials)
J Davis

CHARGE: $79.00 To HAZ. WASTE ACCOUNT

REMARKS:

PW 30002693

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PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

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WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 02 23 89 | COLLECTED BY: Patti Carter Scan 545-2475

SYSTEM I.D. NO. | SYSTEM NAME: 021 MET 09 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase

SOURCE NO. (Well No.) | IF SOURCE IS LAKE OR STREAM ENTER NAME

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment

IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ___FILTERED ___FLUORIDATED ___CHLORINATED ___WATER SOFTENER: TYPE USED ___

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazardous Waste Program
Name
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA. 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	*MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*		.017	mg/l	✓		PO
Barium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
Chromium Cr	0.05*			mg/l			
Iron Fe	0.3			mg/l			
Lead Pb	0.05*	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	.0005	mg/l	✓		
Selenium Se	0.01*	<	0.005	mg/l	✓		
Silver Ag	0.05*			mg/l			
Sodium Na				mg/l			
Hardness				mg/l AS CaCO3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
Color	15.0			Color Units			
Fluoride F	2.0*			mg/l			
Nitrate NO_3	10.0*			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO_4	250			mg/l			
[illegible]	500			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR (Name or Initials)
Daines

CHARGE: $79.00 To

REMARKS: VCAW Haz. Waste Acct

PW 30002694

*MCL = the Maximum Contaminant Level Allowed * Primary Standard

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Department of Social and Health Services
Division of Health
PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

SEE BACK FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 02 23 87 | COLLECTED BY: Patti Carter, Scan 545-2475

SYSTEM I.D. NO.: _____ | SYSTEM NAME: 021 MeT 11 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase | SOURCE NO. (Well No.): ___ ___ | IF SOURCE IS LAKE OR STREAM ENTER NAME

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT _____FILTERED _____FLUORIDATED _____CHLORINATED _____WATER SOFTENER: TYPE USED _____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Name: Hazardous Waste Program
Office of Environmental Health Programs
Street: West 924 Sinto Avenue
City: Spokane, WA. Zip Code: 99201-2595
Telephone: (Area Code: Scan) 545-2475

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	*MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05 P	<	0.010	mg/l	✓		PO
Barium Ba	1.0 P			mg/l			
Cadmium Cd	0.01 P			mg/l			
Chromium Cr	0.05 P			mg/l			
Iron Fe	0.3			mg/l			
Lead Pb	0.05 P	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002 P	<	0.0005	mg/l	✓		[illegible]
Selenium Se	0.01 P	<	0.005	mg/l	✓		M
Silver Ag	0.05 P			mg/l			
Sodium Na				mg/l			
Hardness				mg/l AS CaCo3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0 P			NTU			
Color	15.0			Color Units			
Fluoride F	2.0 P			mg/l			
Nitrate NO3	10.0 P			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO4	250			mg/l			
TDS	500			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR (Name or Initials)
J Davies

CHARGE: $79.00 TO HAZ. WASTE ACCT.

REMARKS:

PW 30002695

*MCL - is the Maximum Contaminant Level Allowed P Primary Standard

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Division of Health
PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 02 23 89 | COLLECTED BY: Patti Carter, Scan 545-2475

SYSTEM I.D. NO.: _____ | SYSTEM NAME: 021 MET 12 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase

SOURCE NO. (Well No.) ___ | IF SOURCE IS LAKE OR STREAM ENTER NAME

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment

IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ____FILTERED ____FLUORIDATED ____CHLORINATED ____WATER SOFTENER: TYPE USED ____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazardous Waste Program
Name
Office of Environmental Health Programs
~~West 924 Sinto Avenue~~
Street
Spokane, WA 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	*MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*	<	0.010	mg/l	✓		PO
Barium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
Chromium Cr	0.05*			mg/l			
Iron Fe	0.3			mg/l			
Lead Pb	0.05*	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	0.0005	mg/l	✓		
Selenium Se	0.01*	<	0.005	mg/l	✓		
Silver Ag	0.05*			mg/l			
Sodium Na				mg/l			
Hardness				mg/l AS CaCO3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
Color	15.0			Color Units			
Fluoride F	2.0*			mg/l			
Nitrate NO_3	10.0*			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO_4	250			mg/l			
pH	600			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR
(Name or Initials)
J Davies

CHARGE: $79.00 to Haz Waste Acct

REMARKS: VOA

PW 30002696

*MCL is the Maximum Contaminant Level Allowed * Primary Standard

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Department of Social and Health Services
Division of Health
PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

SEE BACK
FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 022389 | COLLECTED BY: Patti Carter, Scan 545-2475

SYSTEM I.D. NO.: _____ | SYSTEM NAME: 021 MET 13 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: 1. Surface 3. Well 2. Spring 4. Purchase | SOURCE NO. (Well No.) | IF SOURCE IS LAKE OR STREAM ENTER NAME

THIS SAMPLE WAS TAKEN: Before Treatment / After Treatment | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

TAKEN AFTER TREATMENT WAS IT _____FILTERED _____FLUORIDATED
_____CHLORINATED _____WATER SOFTENER: TYPE USED _____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazardous Waste Program
Name
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA. 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	*MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
[illegible]ic As	0.05*	<	0.010	mg/l	✓		PO
[illegible]rium Ba	1.0*			mg/l			
[illegible]ium Cd	0.01*			mg/l			
[illegible]mium Cr	0.05*			mg/l			
[illegible]n Fe	0.3			mg/l			
[illegible] Pb	0.05*	<	0.002	mg/l	✓		PO
anganese Mn	0.05			mg/l			
[illegible]cury Hg	0.002*	<	0.0005	mg/l	✓		
[illegible]lenium Se	0.01*	<	0.005	mg/l	✓		
[illegible]er Ag	0.05*			mg/l			
[illegible]dium Na				mg/l			
[illegible]dness				mg/l AS CaCO3			
[illegible]nductivity	700			Micromhos/cm 25° C			
[illegible]rbidity	1.0*			NTU			
[illegible]or	15.0			Color Units			
Fluoride F	2.0*			mg/l			
[illegible]ate NO3	10.0*			mg/l			
Chloride Cl	250			mg/l			
[illegible]fate SO4	250			mg/l			
TDS	500			mg/l			
[illegible]pper Cu	1.0			mg/l			
[illegible]nc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR (Name or Initials)
JDavies

CHARGE: $79.00 TO HAZ. WASTE ACCT.

REMARKS:

PW 30002697

*MCL = the Maximum Contaminant Level Allowed * Primary Standard

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Division of Health
PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 022389 | COLLECTED BY: Patti Carter, Telephone: Scan 545-2475

SYSTEM I.D. NO.: _____ | SYSTEM NAME: 021 MET 14 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase | SOURCE NO. (Well No.): ___ | IF SOURCE IS LAKE OR STREAM ENTER NAME:

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment

IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

TAKEN AFTER TREATMENT WAS IT ____FILTERED ____FLUORIDATED ____CHLORINATED ____WATER SOFTENER: TYPE USED _____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazardous Waste Program
Name
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA. 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	*MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*	<	0.010	mg/l	✓		PO
Barium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
Chromium Cr	0.05*			mg/l			
Iron Fe	0.3			mg/l			
Lead Pb	0.05*	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	0.0005	mg/l	✓		[illegible]
Selenium Se	0.01*	<	0.005	mg/l	✓		[illegible]
Silver Ag	0.05*			mg/l			
Sodium Na				mg/l			
Hardness				mg/l AS CaCo3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
Color	15.0			Color Units			
Fluoride F	2.0*			mg/l			
Nitrate NO3	10.0*			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO4	250			mg/l			
TDS	500			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR (Name or Initials)
J Dakes

CHARGE: $79.00 TO

REMARKS: HAZ. WASTE ACCT

PW 30002698

*MCL is the Maximum Contaminant Level Allowed * Primary Standard

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Division of Health
PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 02 23 89 | COLLECTED BY: Patti Carter | Telephone: Scan 545-2475

SYSTEM I.D. NO.: | SYSTEM NAME: 021 MET 15 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase

SOURCE NO. (Well No.): | IF SOURCE IS LAKE OR STREAM ENTER NAME:

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment

IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ____FILTERED ____FLUORIDATED ____CHLORINATED ____WATER SOFTENER: TYPE USED ____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) | (Print Full Name & Address)

Name: Hazardous Waste Program
Office of Environmental Health Programs
Street: West 924 Sinto Avenue
City: Spokane, WA. Zip Code: 99201-2595
Telephone: (Area Code: Scan) 545-2475

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*	<	0.010	mg/l	✓		PO
rium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
romium Cr	0.05*			mg/l			
ron Fe	0.3			mg/l			
ead Pb	0.05*	<	0.002	mg/l	✓		PO
manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	.0005	mg/l	✓		✓
lenium Se	0.01*	<	0.005	mg/l	✓		DA
Silver Ag	0.05*			mg/l			
dium Na				mg/l			
Hardness				mg/l AS CaCO3			
nductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
olor	15.0			Color Units			
Fluoride F	2.0*			mg/l			
itrate NO_3	10.0*			mg/l			
hloride Cl	250			mg/l			
Sulfate SO_4	250			mg/l			
DS	500			mg/l			
Copper Cu	1.0			mg/l			
inc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR (Name or Initials)
J Davies

CHARGE: Charge $79.00 to Haz. Waste Acct

REMARKS: ✓ CRW

PW 30002699

MCL = the Maximum Contaminant Level Allowed * Primary Standard

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Division of Health
PUBLIC HEALTH LABORATORIES
1610 N.E. 150th St., Seattle WA 98155

SEE BACK FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED 02 23 89 | COLLECTED BY: Patti Carter
Telephone Scan 545-2475
1 2 3 4

SOURCE TYPE
___1. Surface ___3. Well
___2. Spring ___4. Purchase

SOURCE NO. (Well No.) | IF SOURCE IS LAKE OR STREAM ENTER NAME

THIS SAMPLE WAS TAKEN
☐ Before Treatment
☐ After Treatment

IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ____FILTERED ____FLUORIDATED
____CHLORINATED ____WATER SOFTENER: TYPE USED ____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazardous Waste Program
Name
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA. 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	MCL	LESS THAN <	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*	<	0.010	mg/l	✓		PO
Barium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
Chromium Cr	0.05*			mg/l			
Iron Fe	0.3			mg/l			
Lead Pb	0.05*	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	0.0005	mg/l	✓		[illegible]
Selenium Se	0.01*	<	0.005	mg/l	✓		[illegible]
Silver Ag	0.05*			mg/l			
Sodium Na				mg/l			
Hardness				mg/l AS CaCO3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
Color	15.0			Color Units			
Fluoride F	2.0*			mg/l			
Nitrate NO3	10.0*			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO4	250			mg/l			
TDS	500			mg/l			
Copper Cu	1.0			mg/l			
Zinc Zn	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR
(Name or Initials)
J. Davies

CHARGE: $79.00 TO HAZ WASTE ACCT.

REMARKS:

PW 30002700

MCL is the Maximum Contaminant Level Allowed * Primary Standard

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1610 N.E. 150th St., Seattle WA 98155

FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

USE THIS FORM FOR THE COMPLETE CHEMICAL ANALYSIS ONLY

[redacted] | DATE COLLECTED: 02 23 89 | COLLECTED BY: Patti Carter, Telephone: Scan 545-2475

SYSTEM I.D. NO.: _____ | SYSTEM NAME: 021 TFR 17 | SYSTEM CLASS (circle one): 1 2 3 4 | COUNTY: Douglas

SOURCE TYPE: ___1. Surface ___3. Well ___2. Spring ___4. Purchase | SOURCE NO. (Well No.) | IF SOURCE IS LAKE OR STREAM ENTER NAME

THIS SAMPLE WAS TAKEN: ☐ Before Treatment ☐ After Treatment | IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (Address)

IF TAKEN AFTER TREATMENT WAS IT ____FILTERED ____FLUORIDATED ____CHLORINATED ____WATER SOFTENER: TYPE USED _____

REMARKS: (Water quality problems, address for additional copies, etc.)

FEES ARE CHARGED FOR CHEMICAL TESTING
A fee schedule is available from this department.

PARTY TO PAY FOR FEE FOR SERVICE TESTING

Signature (Required) (Print Full Name & Address)

Hazardous Waste Program
Office of Environmental Health Programs
West 924 Sinto Avenue
Street
Spokane, WA. 99201-2595
City Zip Code

Telephone: (Scan) 545-2475
Area Code

LABORATORY REPORT

(DO NOT WRITE BELOW THIS LINE)

TESTS	MCL	LESS THAN	RESULTS	UNITS	Compliance YES	Compliance NO	CHEMIST INITIALS
Arsenic As	0.05*	<	0.010	mg/l	✓		PO
Barium Ba	1.0*			mg/l			
Cadmium Cd	0.01*			mg/l			
Chromium Cr	0.05*			mg/l			
Fe	0.3			mg/l			
Lead Pb	0.05*	<	0.002	mg/l	✓		PO
Manganese Mn	0.05			mg/l			
Mercury Hg	0.002*	<	0.0005	mg/l	✓		[redacted]
Selenium Se	0.01*	<	0.005	mg/l	✓		[redacted]
Silver Ag	0.05*			mg/l			
Sodium Na				mg/l			
Hardness				mg/l As CaCO3			
Conductivity	700			Micromhos/cm 25° C			
Turbidity	1.0*			NTU			
Color	15.0			Color Units			
Fluoride F	2.0*			mg/l			
Nitrate NO3	10.0*			mg/l			
Chloride Cl	250			mg/l			
Sulfate SO4	250			mg/l			
[illegible]	500			mg/l			
Zinc Zn	1.0			mg/l			
Copper Cu	5.0			mg/l			

[redacted]

LABORATORY SUPERVISOR (Name or Initials)

J. Davis

CHARGE: $77.00 - to

REMARKS: HAZ. WASTE Account

PW 30002701

MCL is the Maximum Contaminant Level Allowed * Primary Standard

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4922 E UNION AVE
SPOKANE, WA 99212
(509) 534-0161

SEE BACK FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

LAB NUMBER	CC	CITY	DATE RECEIVED	DATE COLLECTED	COLLECTED BY:
				02/17/89	Randy Blackburn

Telephone: 884-1251

Is this a follow up of a previous out of compliance sample? Yes ☐ No ☐

If yes, what was the laboratory number of the previous sample? — — — — — — —

SYSTEM I.D. NO.	SYSTEM NAME:	SYSTEM CLASS (circle one)	COUNTY
7 3 4 0 1 5	Rock Island	(1) 2 3 4	Douglas

SAMPLE LOCATION	THIS SAMPLE TAKEN BEFORE TREATMENT	IF TAKEN *AFTER* TREATMENT WAS IT
/ -	☐ (U) BEFORE ☐ (T) AFTER	___FILTERED ___FLUORIDATED ___CHLORINATED ___WATER SOFTENER: TYPE USED

SOURCE TYPE:	SOURCE NO.	IF SOURCE IS LAKE OR STREAM, ENTER NAME	IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (ADDRESS)
___ 1. SURFACE ___ 3. WELL ___ 2. SPRING ___ 4. PURCHASE	02		Well #2 Center

DATE OF FINAL REPORT: 03/08/89

REMARKS:

Copper, Cu, mg/L <.010

Zinc, Zn, mg/L <.010

SEND REPORT TO: (PRINT FULL NAME & ADDRESS)

City of Rock Island
Name

P.O. Box 99
Street

Rock Island, WA 98850
CITY ZIP CODE

Telephone: (509) 884-1251
Area Code

LABORATORY REPORT
(DO NOT WRITE BELOW THIS LINE)

TESTS	*MCL		Less Than <	RESULTS		Compliance YES	Compliance NO	Chemist Initials	Laboratory Number (If different than above)
Arsenic As	0.05	P	X	.010	mg/l	X		JGH	
Barium Ba	1.0	P	X	25	mg/l	X		JGH	
Cadmium Cd	0.01	P	X	.002	mg/l	X		JGH	
Chromium Cr	0.05	P	X	.010	mg/l	X		JGH	
Iron Fe	0.3		X	05	mg/l	X		JGH	
Lead Pb	0.05	P	X	.010	mg/l	X		JGH	
Manganese Mn	0.05		X	.010	mg/l	X		JGH	
Mercury Hg	0.002	P	X	.0010	mg/l	X		JGH	
Selenium Se	0.01	P	X	.005	mg/l	X		JGH	
Silver Ag	0.05	P	X	.010	mg/l	X		JGH	
Sodium Na				14	mg/l			JGH	
Hardness				222	mg/l As CaCO3			JKC	
Conductivity	700			420	Micromhos/cm 25° C	X		JGH	
Turbidity	1.0	P		.4	NTU	X		JGH	
Color	15.0			5.0	Color Units	X		JKC	
Fluoride F	2.0	P		.2	mg/l	X		JGH	
Nitrate as N	10.0	P		4.9	mg/l	X		JMS	
Chloride Cl	250				mg/l	X		JGH	PW 30002702
Sulfate SO_4	250				mg/l				

RECEIVED
MAR 7 1989
DSHS - DIV. OF HEALTH
SPOKANE DIST. OFFICE

*MCL = the Maximum Contaminant Level Allowed
= Primary Standard

DSHS 4-92G (10-79)

DATA PROCESSING—SEATTLE REGIONAL OFFICE

Laboratory Supervisor

ABC LABORATORIES, INC.
EAST 4922 UNION AVENUE
SPOKANE, WA 99212
509-534-0161

REPORT TO: Town of Rock Island
P.O. Box 99
Rock Island, WA 98850

LAB NO: 32298-89
DATE: 3-08-89
DATE REC'D: 2-24-89
P.O.#:

ATTN: Gwen

DESCRIPTION: Perform Volatile Organic Scans with quality control on two submitted samples.

VOLATILE ORGANIC SCAN

DETECTION LIMIT: 1 ppb ND: Not Detected IS: Internal Standard

Parameter	#2	#3
aaa Trifluorotoluene	IS	IS
Chlorobenzene	ND	ND
1, 3, Dichlorobenzene	ND	ND
1, 4, Dichlorobenzene	ND	ND
1, 2, Dichlorobenzene	ND	ND
Bromodichloromethane	ND	ND
Bromoform	ND	ND
Carbon Tetrachloride	ND	ND
Chloroform	ND	ND
Dibromochloromethane	ND	ND
1, 1, Dichloroethane	ND	ND
1, 2, Dichloroethane	ND	ND
1, 1, Dichloroethylene	ND	ND
Trans 1, 2, Dichloroethylene	ND	ND
1, 2, Dichloropropane	ND	ND
Cis 1, 3, Dichloropropane	ND	ND
Trans 1, 3, Dichloropropylene	ND	ND
Methylene Chloride	ND	ND
1, 1, 2, 2, Tetrachloroethane	ND	ND
Trichloroethylene	ND	ND
1, 1, 1, Trichloroethane	ND	ND
1, 1, 2, Trichloroethane	ND	ND
Tetrachloroethylene	ND	ND
2, Chloroethylvinyl Ether	ND	ND

Respectfully submitted,
ABC LABORATORIES, INC.

W.E. Burkhardt
Manager

PW 30002703

ABC LABORATORIES, INC.
EAST 4922 UNION AVENUE
SPOKANE, WA 99212
509-534-0161

REPORT TO: Town of Rock Island
P.O. Box 99
Rock Island, WA 98850

LAB NO: 32298-89
DATE: 3-08-89
DATE REC'D: 2-24-89
P.O.#:

ATTN: Gwen

DESCRIPTION: Perform Volatile Organic Scans with quality control on two submitted samples.

VOLATILE ORGANIC SCAN

DETECTION LIMIT: 1 ppb ND: Not Detected IS: Internal Standard

Parameter	#2	#3
aaa Trifluorotoluene	IS	IS
Chlorobenzene	ND	ND
1, 3, Dichlorobenzene	ND	ND
1, 4, Dichlorobenzene	ND	ND
1, 2, Dichlorobenzene	ND	ND
Bromodichloromethane	ND	ND
Bromoform	ND	ND
Carbon Tetrachloride	ND	ND
Chloroform	ND	ND
Dibromochloromethane	ND	ND
1, 1, Dichloroethane	ND	ND
1, 2, Dichloroethane	ND	ND
1, 1, Dichloroethylene	ND	ND
Trans 1, 2, Dichloroethylene	ND	ND
1, 2, Dichloropropane	ND	ND
Cis 1, 3, Dichloropropane	ND	ND
Trans 1, 3, Dichloropropylene	ND	ND
Methylene Chloride	ND	ND
1, 1, 2, 2, Tetrachloroethane	ND	ND
Trichloroethylene	ND	ND
1, 1, 1, Trichloroethane	ND	ND
1, 1, 2, Trichloroethane	ND	ND
Tetrachloroethylene	ND	ND
2, Chloroethylvinyl Ether	ND	ND

Respectfully submitted,
ABC LABORATORIES, INC.

W.E. Burkhardt
Manager

PW 30002704

RESULTS OF ANALYSIS

Date: 2/24/89

Sample Identification	Lab Number	Test or Residue	Results	Units	MRL
GWEN HOLCK, CITY OF ROCK ISCAND, WA.					
WELL #2, WATER FROM CITY WELL 2/21/89	89W0005	CHC PESTICIDE SCAN	N.D.	PPB	0.010
		ORGAND. PHOS. SCAN	N.D.	"	0.050
WELL #3, WATER ROCK ISLAND CITY WELL. 2/21/89	89W0006	CHC PESTICIDE SCAN	N.D.	P.P.B.	0.010
		O.P. PESTICIDE SCAN	N.D.	"	0.050

REPORTED RESULTS TO GWEN HOLCK, 10:00 AM, 2/24/89. HR.

Harold E. Kuak

PW 30002705

NATIONAL CHEM LAB
Water Test Report

Date: 03/08/89
Time: 12:14

Thank you for using National Chem Lab. If you have any questions regarding these results please contact the lab at 509-754-5725.

NCL#: WE9030802 Chemist: MICKEY HUNACEK Mickey Hunacek

CITY OF ROCK ISLAND SAMPLE #:

LOT #: PO #: COMMENT:

DATE RECVD: 02/09/89 TIME RECVD: 12:00 RECVD BY: MICKEY

TRANSPORTATION MODE: CUSTOMER DELIVER

SAMPLE SOURCE: WELL #2

SAMPLE SIZE: CONTAINER TYPE:

DELIVERED BY: CUSTOMER

TEST	MCL	RESULTS	DATE ANALYZED	TIME ANALYZED	CHEMIST
ARSENIC	0.050	<.001 ppm	03/06/89	12:00	MICKEY HUNACEK
SELENIUM	0.010	<.001 mg/L	03/06/89	12:00	MICKEY HUNACEK
CHROMIUM	0.050	0.02 mg/L	03/06/89	12:00	MICKEY HUNACEK

PW 30002706

NATIONAL CHEM LAB
Water Test Report

Date: 03/08/89
Time: 12:12

Thank you for using National Chem Lab. If you have any questions regarding these results please contact the lab at 509-754-5725.

NCL#: WE9030801 Chemist: MICKEY HUNACEK Mickey Hunacek

CITY OF ROCK ISLAND SAMPLE #:

LOT #: PO #: COMMENT:

DATE RECVD: 01/31/89 TIME RECVD: 12:00 RECVD BY: MICKEY

TRANSPORTATION MODE: CUSTOMER DELIVER

SAMPLE SOURCE: WELL #3

SAMPLE SIZE: CONTAINER TYPE:

DELIVERED BY: CUSTOMER

TEST	MCL	RESULTS	DATE ANALYZED	TIME ANALYZED	CHEMIST
ARSENIC	0.050	<.001 ppm	03/06/89	09:30	MICKEY HUNACEK
SELENIUM	0.010	<.001 mg/L	03/06/89	09:30	MICKEY HUNACEK
CHROMIUM	0.050	0.03 mg/L	03/06/89		MICKEY HUNACEK

PW 30002707

NATIONAL CHEM LAB
Water Test Report

Date: 03/08/89
Time: 12:13

Thank you for using National Chem Lab. If you have any questions regarding these results please contact the lab at 509-754-5725.

NCL#: WE9030803 Chemist: MICKEY HUNACEK Mickey Hunacek

CITY OF ROCK ISLAND SAMPLE #:

LOT #: PO #: COMMENT:

DATE RECVD: 02/09/89 TIME RECVD: 12:00 RECVD BY: MICKEY

TRANSPORTATION MODE: CUSTOMER DELIVER

SAMPLE SOURCE: TOWN HALL

SAMPLE SIZE: CONTAINER TYPE:

DELIVERED BY: CUSTOMER

TEST	MCL	RESULTS	DATE ANALYZED	TIME ANALYZED	CHEMIST
ARSENIC	0.050	<.001 ppm	03/06/89	12:00	MICKEY HUNACEK
SELENIUM	0.010	<.001 mg/L	03/06/89	12:00	MICKEY HUNACEK
CHROMIUM	0.050	0.02 mg/L	03/06/89	12:00	MICKEY HUNACEK

PW 30002708

ABC LABORATORIES, INC.
EAST 4922 UNION AVENUE
SPOKANE, WA 99212
509-534-0161

REPORT TO: Town of Rock Island
P.O. Box 99
Rock Island, WA 98850

LAB NO: 32298-89
DATE: 3-08-89
DATE REC'D: 2-24-89
P.O.#:

ATTN: Gwen

DESCRIPTION: Perform Volatile Organic Scans with quality control on two submitted samples.

VOLATILE ORGANIC SCAN

DETECTION LIMIT: 1 ppb ND: Not Detected IS: Internal Standard

Parameter	#2	#3
aaa Trifluorotoluene	IS	IS
Chlorobenzene	ND	ND
1, 3, Dichlorobenzene	ND	ND
1, 4, Dichlorobenzene	ND	ND
1, 2, Dichlorobenzene	ND	ND
Bromodichloromethane	ND	ND
Bromoform	ND	ND
Carbon Tetrachloride	ND	ND
Chloroform	ND	ND
Dibromochloromethane	ND	ND
1, 1, Dichloroethane	ND	ND
1, 2, Dichloroethane	ND	ND
1, 1, Dichloroethylene	ND	ND
Trans 1, 2, Dichloroethylene	ND	ND
1, 2, Dichloropropane	ND	ND
Cis 1, 3, Dichloropropane	ND	ND
Trans 1, 3, Dichloropropylene	ND	ND
Methylene Chloride	ND	ND
1, 1, 2, 2, Tetrachloroethane	ND	ND
Trichloroethylene	ND	ND
1, 1, 1, Trichloroethane	ND	ND
1, 1, 2, Trichloroethane	ND	ND
Tetrachloroethylene	ND	ND
2, Chloroethylvinyl Ether	ND	ND

Respectfully submitted,
ABC LABORATORIES, INC.

W.E. Burkhardt
Manager

PW 30002710

ase Print Plainly
SE HEAVY PENCIL
O NOT WRITE IN SHADED AREAS

LABORATORY NAME
ABC LABORATORIES
4922 E UNION AVE
SPOKANE, WA 99212
(509) 534-0161

SEE BACK FOR INSTRUCTIONS

WATER SAMPLE INFORMATION FOR INORGANIC CHEMICAL ANALYSES

LAB NUMBER	CC	CITY DATE RECEIVED	DATE COLLECTED	COLLECTED BY: Randy Blackburn
		02/17/89	02/17/89	Telephone: 884-1261

Is this a follow up of a previous out of compliance sample? Yes ☐ No ☐

If yes, what was the laboratory number of the previous sample? — — — — — — —

SYSTEM I.D. NO.	SYSTEM NAME:	SYSTEM CLASS (circle one)	COUNTY
7 3 4 0 1E	Rock Island	1 (2) 3 4	Douglas

SAMPLE LOCATION	THIS SAMPLE TAKEN BEFORE TREATMENT	IF TAKEN *AFTER* TREATMENT WAS IT
/	☐ BEFORE (U) ☐ AFTER (T)	___FILTERED ___FLUORIDATED ___CHLORINATED ___WATER SOFTENER: TYPE USED

SOURCE TYPE:	SOURCE NO.	IF SOURCE IS LAKE OR STREAM, ENTER NAME	IF SAMPLE WAS DRAWN FROM DISTRIBUTION SYSTEM IT WAS COLLECTED FROM SYSTEM AT: (ADDRESS)
___ 1. SURFACE X 3. WELL ___ 2. SPRING ___ 4. PURCHASE	03		Well #3 Penn

DATE OF FINAL REPORT: 03/17/89

REMARKS:

Copper, Cu, mg/L 0.046
Zinc, Zn, mg/L .010

SEND REPORT TO: (PRINT FULL NAME & ADDRESS)
City of Rock Island
Name
P.O. Box 99
Street
Rock Island, WA. 98850
CITY ZIP CODE
Telephone: (509) 884-1261
Area Code

LABORATORY REPORT
(DO NOT WRITE BELOW THIS LINE)

TESTS	*MCL	Less Than	RESULTS		Compliance YES	Compliance NO	Chemist Initials	Laboratory Number (If different than above)
Arsenic As	0.05 P		.016	mg/l	X		JGH	
Barium Ba	1.0 P	X	.25	mg/l	X		JGH	
Cadmium Cd	0.01 P	X	.002	mg/l	X		JGH	
Chromium Cr	0.05 P	X	.010	mg/l	X		JGH	
Iron Fe	0.3		1.62	mg/l		X	JGH	
Lead Pb	0.05 P	X	.010	mg/l	X		JGH	
Manganese Mn	0.05		.015	mg/l	X		JGH	
Mercury Hg	0.002 P	X	.0010	mg/l	X		JGH	
Selenium Se	0.01 P	X	.005	mg/l	X		JGH	
Silver Ag	0.05 P	X	.010	mg/l	X		JGH	
Sodium Na			15	mg/l			JGH	
Hardness			226	mg/l As CaCO3			JKC	
Conductivity	700		420	Micromhos/cm 25° C	X		JGH	
Turbidity	1.0 P		2.8	NTU		X	JGH	
Color	15.0		6.0	Color Units	X		JKC	
Fluoride F	2.0 P		.2	mg/l	X		JGH	
Nitrate as N	10.0 P		2.3	mg/l	X		JMS	
Chloride Cl	250		1.0	mg/l	X		JGH	PW 30002711
Sulfate SO_4	250			mg/l				

RECEIVED
USPHS - DIV. OF HEALTH
REGIONAL DIST. OFFICE

*MCL = the Maximum Contaminant Level Allowed

DATA PROCESSING - SEATTLE REGIONAL OFFICE

Laboratory Supervisor

May 2, 1991 letter report regarding tests on "hard pan" and "carbon block"

C:\reports\229r.wr1

Environmental
Engineering &
Consulting, Inc.

May 2, 1991

Mr. Robert L. Miller
Assistant Plant Manager
Silicon Metaltech, Inc.
100 4th Street
Rock Island, Washington 98850

Dear Robert:

In accordance with our telephone conversation last week, enclosed are data on furnace wastes (carbon block and hard pan) which were not available when the December 5, 1988 report was issued. These are data that were mentioned in my March 14, 1991 letter to Jim Trunzo which were not included in the data package recently provided to WDOE. It was recommended these additional data also be submitted to WDOE.

Testing of carbon block and hard pan samples was recommended in 1988 to assess whether any wastes disposed in your onsite landfill/piles were hazardous wastes for the same reason that characterization of the fume waste had been carried out earlier.

The carbon block and hard pan samples were collected in November 1988 when Furnace 1 was undergoing a maintenance overhaul. Three samples were collected of each of the two types of material. Your chemist assisted with the sampling such that the samples would be representative of these wastes. The three samples of carbon block were composited in the laboratory and tested for most priority pollutants (metals, total cyanide, semi-volatile organics [base-neutral extractables and acid extractables], nonpriority pollutant semi-volatile organics. EP Toxicity tests were also performed. Likewise a hard pan composite prepared by the laboratory was tested for the same parameters. The samples were not tested for volatile organics because it was so unlikely that any volatile materials could be present at the high operating temperatures of the furnace.

The laboratory results have been summarized in the attached table. Copies of the laboratory reports for this testing are also attached.

These data indicated that these furnace liner wastes have levels of metals/elements similar to background soil, although chromium was higher in the carbon block sample. Carbon block and hard pan samples had no detectable cyanide and no detectable semi-volatile organics. None of the EP Toxicity

19125 Northcreek Parkway, Suite 111 Bothell, WA 98011-8002 206.485.3437 FAX 206.483.1058

metal/element test parameters were above detectable levels. Accordingly the carbon block and hard pan would not be classified as hazardous or dangerous under the former EP Toxicity test. Generally the results indicate these wastes do not have levels of contaminants that should be of concern.

These data are potentially relevant to ground water quality at your facility because these wastes are piled/disposed onsite.

Please do not hesitate to call me if there are any questions.

Sincerely,

Patrick H. Wicks, PE, CHMM
President

Enclosures

CARBON BLOCK & HARD PAN FURNACE WASTES
ANALYTIC DATA SUMMARY

Constituent Concentration, parts per million (ppm, mg/l, mg/kg)

Sample Location	Furnace 1	Furnace 1
Sample Identification	Carbon Block Composite	Hard Pan Composite
Sample Date	15-Nov 1988	15-Nov 1988
Sample Type	Carbon Block	Hard Pan
Sample Depth, Ft		
Laboratory	Am Test	Am Test
Report Number or Date	36-88	36-88
Laboratory Sample Number	823986	823987
PRIORITY POLLUTANTS		
METALS		
Antimony	<2.0	<2.0
Arsenic	<3.0	<3.0
Beryllium	<0.70	<0.70
Cadmium	<0.20	<0.20
Chromium	187	3.8
Copper	10	40
Lead	<2.0	<2.0
Mercury	<0.0096	<0.0092
Nickel	14	21
Selenium	<3.0	<3.0
Silver	<1.0	<1.0
Thallium	<2.0	<2.0
Zinc	13	61
MISCELLANEOUS		
Total Cyanide	<0.06	<0.06
BASE-NEUTRAL EXTRACTABLES		
Acenaphthene	<0.0333	<0.0333
Acenaphthylene	<0.0333	<0.0333
Anthracene	<0.0333	<0.0333
Benzidine	<0.1000	<0.1000
Benzo(a)anthracene	<0.0333	<0.0333
Benzo(a)pyrene	<0.0333	<0.0333
Benzo(b)fluoranthene	<0.0333	<0.0333
Benzo(ghi)perylene	<0.0333	<0.0333
Bis(2-chloroethoxyl) methane	<0.0333	<0.0333
Bis(2-chloroethyl) ether	<0.0333	<0.0333
Bis(2-chloroisopropyl) ether	<0.0333	<0.0333
Bis(2-ethylhexyl) phthalate	0.06	0.04

PW 30001130

CARBON BLOCK & HARD PAN FURNACE WASTES
ANALYTIC DATA SUMMARY

Constituent Concentration, parts per million (ppm, mg/l, mg/kg)

Sample Location	Furnace 1	Furnace 1
Sample Identification	Carbon Block Composite	Hard Pan Composite
Sample Date	15-Nov 1988	15-Nov 1988
Sample Type	Carbon Block	Hard Pan
Sample Depth, Ft		
Laboratory	Am Test	Am Test
Report Number or Date	36-88	36-88
Laboratory Sample Number	823986	823987
4-Bromophenyl phenyl ether	<0.0667	<0.0667
Butyl benzyl phthalate	<0.0333	<0.0333
2-Chloronaphthalene	<0.0333	<0.0333
Chrysene	<0.0333	<0.0333
4-Chlorophenyl phenyl ether	<0.0333	<0.0333
Dibenzo(a,h)anthracene	<0.0333	<0.0333
1,2-Dichlorobenzene	<0.0333	<0.0333
1,3-Dichlorobenzene	<0.0333	<0.0333
1,4-Dichlorobenzene	<0.0333	<0.0333
3,3-Dichlorobenzidine	<0.1000	<0.1000
Diethyl phthalate	<0.0333	<0.0333
Dimethyl phthalate	<0.0333	<0.0333
Di-n-Butyl phthalate	0.0433	<0.0333
2,4-Dinitrotoluene	<0.0667	<0.0667
2,6-Dinitrotoluene	<0.0667	<0.0667
Di-n-octyl phthalate	<0.0333	<0.0333
1,2-Diphenylhydrazine		
Fluoranthene	<0.0333	<0.0333
Fluorene	<0.0333	<0.0333
Hexachlorobenzene	<0.0667	<0.0667
Hexachlorobutadiene	<0.0333	<0.0333
Hexachlorocyclopentadiene	<0.0667	<0.0667
Hexachloroethane	<0.0333	<0.0333
Indeno(1,2,3-cd)pyrene	<0.0333	<0.0333
Isophorone	<0.0333	<0.0333
Naphthalene	<0.1667	<0.1667
Nitrobenzene	<0.0333	<0.0333
N-nitrosodi-n-propylamine	<0.0333	<0.0333
N-Nitrosodiphenylamine	<0.0333	<0.0333
Phenanthrene	<0.0333	<0.0333
Pyrene	<0.0333	<0.0333
1,2,4-Trichlorobenzene	<0.0333	<0.0333

PW 30001131

CARBON BLOCK & HARD PAN FURNACE WASTES
ANALYTIC DATA SUMMARY

Constituent Concentration, parts per million (ppm, mg/l, mg/kg)

Sample Location	Furnace 1	Furnace 1
Sample Identification	Carbon Block Composite	Hard Pan Composite
Sample Date	15-Nov 1988	15-Nov 1988
Sample Type	Carbon Block	Hard Pan
Sample Depth, Ft		
Laboratory	Am Test	Am Test
Report Number or Date	36-88	36-88
Laboratory Sample Number	823986	823987
ACID EXTRACTABLES		
2-Chlorophenol	<0.0333	<0.0333
2,4-Dichlorophenol	<0.0333	<0.0333
2,4-Dimethylphenol	<0.0333	<0.0333
4,6-Dinitro-o-cresol	<0.1667	<0.1667
2,4-Dinitrophenol	<0.1667	<0.1667
2-Nitrophenol	<0.0333	<0.0333
4-Nitrophenol	<0.1333	<0.1333
p-Chloro-m-cresol	<0.0333	<0.0333
Pentachlorophenol	<0.1667	<0.1667
Phenol	<0.0333	<0.0333
2,4,6-Trichlorophenol	<0.0667	<0.0667
NON-PRIORITY POLLUTANTS		
OTHER ORGANICS		
Xylenes, total		
Acetone		
Aniline	<0.0333	<0.0333
Azobenzene	<0.0333	<0.0333
Benzo(k)fluoranthene	<0.0333	<0.0333
Benzoic acid	<0.0333	<0.0333
Benzyl alcohol	<0.0333	<0.0333
2-Butanone (MEK)		
Carbon disulfide		
1,2-cis-Dichloroethylene		
Chloroaniline	<0.0333	<0.0333
Dibenzofuran	<0.0333	<0.0333
2-Hexanone (MNBK)		
4-Methyl-2-pentanone (MIBK)		
2-Methyl phenol	<0.0333	<0.0333
4-Methyl phenol	<0.0333	<0.0333

PW 30001132

CARBON BLOCK & HARD PAN FURNACE WASTES
ANALYTIC DATA SUMMARY

Constituent Concentration, parts per million (ppm, mg/l, mg/kg)

Sample Location	Furnace 1	Furnace 1
Sample Identification	Carbon Block Composite	Hard Pan Composite
Sample Date	15-Nov 1988	15-Nov 1988
Sample Type	Carbon Block	Hard Pan
Sample Depth, Ft		
Laboratory	Am Test	Am Test
Report Number or Date	36-88	36-88
Laboratory Sample Number	823986	823987
2-Methyl naphthalene	<0.0333	<0.0333
2-Nitroaniline	<0.0333	<0.0333
3-Nitroaniline	<0.0667	<0.0667
4-Nitroaniline	<0.1000	<0.1000
Styrene		
2,4,5-Trichlorophenol	<0.0667	<0.0667
Vinyl acetate		
total 1,2-Dichloroethylene		

TCLP or E P TOXICITY	E P TOX	E P TOX	EP Toxicity Maximum Allowable Concentr.
Elements/Metals			
Arsenic	<0.02	<0.02	5
Barium	<1.0	<1.0	100
Cadmium	<0.05	<0.05	1
Chromium	<0.05	<0.05	5
Copper			-
Lead	<0.10	<0.10	5
Mercury	<0.001	<0.001	0.2
Nickel			-
Selenium	<0.05	<0.05	1
Silver	<0.05	<0.05	5
Zinc			-

PW 30001133

The ERM Group

Sample Chain of Custody

W.O.No.: 36-88 | Project Name: SILICON METALTECH

Sampler: P. WICKS / T. CLIMER

ERM-NW, INC
2535 152nd AVE, NE, SUITE
Redmond, WA 98052

ERM Sample Number	Date	Time	COMP	GRAB	Sample Location	Number of Containers	Remarks
	11-15-88	12:30		✓	F#1 CARBON BLOCK #1	1	885-1787
	11-15-88	12:30		✓	F#1 CARBON BLOCK #3	1	ANALYZE ONE COMPOSITE FROM THESE THREE SAMPLES FOR PRIORITY POLLUTANT METALS TOTAL CYANIDE (C.P. METHOD) AND SEMI-VOLATILE ORGANICS VIA EPA METHOD 8270 OR 8250.
	11-15-88	12:30		✓	F#1 CARBON BLOCK #2	1	
	11-15-88	12:30		✓	F#1 HARDPAN #1	1	
	11-15-88	12:30		✓	F#1 HARDPAN #2	1	
	11-15-88	12:30		✓	F#1 HARDPAN #3	1	

SPECIAL INSTRUCTIONS: RETAIN UNUSED SAMPLES FOR POSSIBLE ADDITIONAL ANALYSES. PROVIDE FLOPPY DISK IN WORD PERFECT OF REPORT (IN ASCII).

Sample Relinquished	Date	Time	Sample Received by:	Date	Time	Reason for Transfer
P. Wicks / P. Wicks	11-17-88	8:35	Jim Bennett	11-17-88	8:35	transport to lab
Jim Bennett	11-17-88	10:55	[illegible]	11-17-88	10:55	analysis of samples

PW 30001134

COPIES: White & Yellow copies accompany sample shipment to laboratory. Yellow copy retained by laboratory. White copy to be returned to ERM for files. Pink copy retained by sampler. Gold copy extra copy as needed (warehouse)

am test inc.
14603 N.E. 87th St. • REDMOND, WASHINGTON 98052 • 206/885-1664

ANALYSIS REPORT

CLIENT: ERM Northwest, Inc.

DATE RECEIVED: 11/29/88

REPORT TO: Pat Wicks
2535 - 152nd Avenue NE
Suite B2
Redmond, WA 98052

DATE REPORTED: 12/7/88

PROJECT NO.: 36-88

SILICON METAL TECH

Laboratory Sample Nos.	823986	823987
Client Identification	F#1 Carbon Block Comp	F#1 Hard Pan Comp
Cyanide (ug/g)	<0.06	<0.06

PW 30001135

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

E.P. TOXICITY

Laboratory Sample Nos.	823986	823987	MAXIMUM ALLOWABLE
Client Identification	F#1 Carbon Block Comp	F#1 Hard Pan Comp	CONCENTRATION (mg/l)
Arsenic	<0.02	<0.02	5.0
Selenium	<0.05	<0.05	1.0
Barium	<1.0	<1.0	100.
Cadmium	<0.05	<0.05	1.0
Lead	<0.10	<0.10	5.0
Mercury	<0.001	<0.001	0.20
Silver	<0.05	<0.05	5.0
Chromium	<0.05	<0.05	5.0

All values are reported in mg/l.

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos.	823986	823987
Client Identification	F#1 Carbon Block Comp	F#1 Hard Pan Comp
Total Solids (%)	100.	100.
Arsenic	<3.0 <3.0]	<3.0
Silver	<1.0 <1.0]	<1.0
Antimony	<2.0 <2.0]	<2.0
Beryllium	<0.70 <0.70]	<0.70
Cadmium	<0.20 <0.20]	<0.20
Chromium	187. 171.]	3.8
Copper	10. 10.]	40.
Mercury	<0.0096	<0.0092

All results are reported in ug/g on a dry weight basis.

PW 30001137

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos.	823986	823987
Client Identification	F#1 Carbon Block Comp	F#1 Hard Pan Comp
Nickel	14. 14.]	21.
Lead	<2.0 <2.0]	<2.0
Selenium	<3.0 <3.0]	<3.0
Thallium	<2.0 <2.0]	<2.0
Zinc	13. 11.]	61.

All results are reported in ug/g on a dry weight basis.

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

NBS 1645 REFERENCE MATERIAL

Element	Determination (ug/g)	True Value (ug/g)	Recovery (%)
Arsenic	45.	46.	68.
Silver	NC	NC	NC
Antimony	NC	NC	NC
Beryllium	NC	NC	NC
Cadmium	9.1	10.2	89.
Chromium	24,970.	29,600.	84.
Copper	103.	109.	95.
Mercury	-	-	-
Nickel	41.	45.8	89.
Lead	598.	714.	84.
Selenium	NC	NC	NC
Thallium	<5.54	1.44	-
Zinc	1,518.	1,720.	88.

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos. Client Identification	BNA Method Blank	823987 F#1 Hard Pan Comp.	DETECTION LIMIT (ug/kg)
Aniline	ND	ND	33.3
2-Chlorophenol	ND	ND	33.3
Bis (2-Chloroethyl) Ether	ND	ND	33.3
Phenol	ND	ND	33.3
1,3-Dichlorobenzene	ND	ND	33.3
1,4-Dichlorobenzene	ND	ND	33.3
1,2-Dichlorobenzene	ND	ND	33.3
Benzyl Alcohol	ND	ND	33.3
Bis (2-Chloroisopropyl) Ether	ND	ND	33.3
2-Methyl Phenol	ND	ND	33.3
Hexachloroethane	ND	ND	33.3
N-Nitrosodipropylamine	ND	ND	33.3
Nitrobenzene	ND	ND	33.3
4-Methylphenol	ND	ND	33.3
Isopherone	ND	ND	33.3
2-Nitrophenol	ND	ND	33.3
2,4-Dimethylphenol	ND	ND	33.3
Bis (2-Chloroethoxy) Methane	ND	ND	33.3
2,4-Dichlorophenol	ND	ND	33.3
1,2,4-Trichlorobenzene	ND	ND	33.3
Naphthalene	ND	ND	166.7
Benzoic Acid	ND	ND	33.3
4-Chloroaniline	ND	ND	33.3
Hexachlorobutadiene	ND	ND	33.3
2-Methylnaphthalene	ND	ND	33.3
4-Chloro-3-Methylphenol	ND	ND	33.3
Hexachlorocyclopentadiene	ND	ND	66.7
2,4,6-Trichlorophenol	ND	ND	66.7
2,4,5-Trichlorophenol	ND	ND	66.7

ND = Not Detected.
All values are reported in ug/kg.

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos. Client Identification	BNA Method Blank	823987 F#1 Hard Pan Comp.	DETECTION LIMIT (ug/kg)
2-Chloronaphthalene	ND	ND	33.3
2-Nitroaniline	ND	ND	33.3
Acenaphthylene	ND	ND	33.3
Dimethyl Phthalate	ND	ND	33.3
2,6-Dinitrotoluene	ND	ND	66.7
Acenaphthene	ND	ND	33.3
3-Nitroaniline	ND	ND	66.7
2,4-Dinitrophenol	ND	ND	166.7
Dibenzofuran	ND	ND	33.3
2,4-Dinitrotoluene	ND	ND	66.7
4-Nitrophenol	ND	ND	133.3
Fluorene	ND	ND	33.3
4-Chlorophenyl Phenyl Ether	ND	ND	33.3
Diethyl Phthalate	ND	ND	33.3
4-Nitroaniline	ND	ND	100.0
2-Methyl-4,6-Dinitrophenol	ND	ND	166.7
N-Nitrosodiphenylamine	ND	ND	33.3
Azobenzene	ND	ND	33.3
4-Bromophenyl Phenyl Ether	ND	ND	66.7
Hexachlorobenzene	ND	ND	66.7
Pentachlorophenol	ND	ND	166.7
Phenanthrene	ND	ND	33.3
Anthracene	ND	ND	33.3
Di-N-Butyl Phthalate	ND	ND	33.3
Fluoranthene	ND	ND	33.3
Pyrene	ND	ND	33.3
Benzidine	ND	ND	100.0
Benzyl Butyl Phthalate	ND	ND	33.3
Benzo (a) Anthracene	ND	ND	33.3

ND = Not Detected.
All values are reported in ug/kg.

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos.	BNA Method Blank	823987 F#1 Hard Pan Comp.
Client Identification		

Compound	Concentration (ug/kg)		DETECTION LIMIT (ug/kg)
Chrysene	ND	ND	33.3
3,3-Dichlorobenzidine	ND	ND	100.0
Bis (2-Ethylhexyl) Phthalate	ND	40.0	33.3
Di-N-Octyl Phthalate	ND	ND	33.3
Benzo (b) Fluoranthene	ND	ND	33.3
Benzo (k) Fluoranthene	ND	ND	33.3
Benzo (a) Pyrene	ND	ND	33.3
Indeno (1,2,3-cd) Pyrene	ND	ND	33.3
Dibenzo (a,h) Anthracene	ND	ND	33.3
Benzo (g,h,i) Perylene	ND	ND	33.3

Surrogate Compounds	Recovery (%)		AMOUNT SPIKED (ug/kg)
2-Fluorophenol	81.	79.	50.
D6-Phenol	69.	71.	50.
D5-Nitrobenzene	69.	51.	25.
2-Fluorobiphenyl	73.	77.	25.
2,4,6-Tribromophenol	65.	69.	50.
D14-Terphenyl	90.	65.	25.

ND = Not Detected.

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos. / Client Identification	823986 Duplicate F#1 Carbon Block Comp	823986 F#1 Carbon Block Comp	DETECTION LIMIT (ug/kg)
Aniline	ND	ND	33.3
2-Chlorophenol	ND	ND	33.3
Bis (2-Chloroethyl) Ether	ND	ND	33.3
Phenol	ND	ND	33.3
1,3-Dichlorobenzene	ND	ND	33.3
1,4-Dichlorobenzene	ND	ND	33.3
1,2-Dichlorobenzene	ND	ND	33.3
Benzyl Alcohol	ND	ND	33.3
Bis (2-Chloroisopropyl) Ether	ND	ND	33.3
2-Methyl Phenol	ND	ND	33.3
Hexachloroethane	ND	ND	33.3
N-Nitrosodipropylamine	ND	ND	33.3
Nitrobenzene	ND	ND	33.3
4-Methylphenol	ND	ND	33.3
Isopherone	ND	ND	33.3
2-Nitrophenol	ND	ND	33.3
2,4-Dimethylphenol	ND	ND	33.3
Bis (2-Chloroethoxy) Methane	ND	ND	33.3
2,4-Dichlorophenol	ND	ND	33.3
1,2,4-Trichlorobenzene	ND	ND	33.3
Naphthalene	ND	ND	166.7
Benzoic Acid	ND	ND	33.3
4-Chloroaniline	ND	ND	33.3
Hexachlorobutadiene	ND	ND	33.3
2-Methylnaphthalene	ND	ND	33.3
4-Chloro-3-Methylphenol	ND	ND	33.3
Hexachlorocyclopentadiene	ND	ND	66.7
2,4,6-Trichlorophenol	ND	ND	66.7
2,4,5-Trichlorophenol	ND	ND	66.7

ND = Not Detected.
All values are reported in ug/kg.

CLIENT: ERM Northwest, Inc.

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88

REPORT TO: Pat Wicks

PROJECT NO.: 36-88

Laboratory Sample Nos.	823986 Duplicate	823986	DETECTION LIMIT
Client Identification	F#1 Carbon Block Comp	F#1 Carbon Block Comp	(ug/kg)
2-Chloronaphthalene	ND	ND	33.3
2-Nitroaniline	ND	ND	33.3
Acenaphthylene	ND	ND	33.3
Dimethyl Phthalate	ND	ND	33.3
2,6-Dinitrotoluene	ND	ND	66.7
Acenaphthene	ND	ND	33.3
3-Nitroaniline	ND	ND	66.7
2,4-Dinitrophenol	ND	ND	166.7
Dibenzofuran	ND	ND	33.3
2,4-Dinitrotoluene	ND	ND	66.7
4-Nitrophenol	ND	ND	133.3
Fluorene	ND	ND	33.3
4-Chlorophenyl Phenyl Ether	ND	ND	33.3
Diethyl Phthalate	ND	ND	33.3
4-Nitroaniline	ND	ND	100.0
2-Methyl-4,6-Dinitrophenol	ND	ND	166.7
N-Nitrosodiphenylamine	ND	ND	33.3
Azobenzene	ND	ND	33.3
4-Bromophenyl Phenyl Ether	ND	ND	66.7
Hexachlorobenzene	ND	ND	66.7
Pentachlorophenol	ND	ND	166.7
Phenanthrene	ND	ND	33.3
Anthracene	ND	ND	33.3
Di-N-Butyl Phthalate	36.7	43.3	33.3
Fluoranthene	ND	ND	33.3
Pyrene	ND	ND	33.3
Benzidine	ND	ND	100.0
Benzyl Butyl Phthalate	ND	ND	33.3
Benzo (a) Anthracene	ND	ND	33.3

ND = Not Detected.
All values are reported in ug/kg.

CLIENT: ERM Northwest, Inc.

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88

REPORT TO: Pat Wicks

PROJECT NO.: 36-88

Laboratory Sample Nos.	823986 Duplicate	823986
Client Identification	F#1 Carbon Block Comp	F#1 Carbon Block Comp

Compound	Concentration (ug/kg)		DETECTION LIMIT (ug/kg)
Chrysene	ND	ND	33.3
3,3-Dichlorobenzidine	ND	ND	100.0
Bis (2-Ethylhexyl) Phthalate	43.3	60.0	33.3
Di-N-Octyl Phthalate	ND	ND	33.3
Benzo (b) Fluoranthene	ND	ND	33.3
Benzo (k) Fluoranthene	ND	ND	33.3
Benzo (a) Pyrene	ND	ND	33.3
Indeno (1,2,3-cd) Pyrene	ND	ND	33.3
Dibenzo (a,h) Anthracene	ND	ND	33.3
Benzo (g,h,i) Perylene	ND	ND	33.3

Surrogate Compounds	Recovery (%)		AMOUNT SPIKED (ug/kg)
2-Fluorophenol	82.	72.	50.
D6-Phenol	75.	65.	50.
D5-Nitrobenzene	66.	56.	25.
2-Fluorobiphenyl	81.	74.	25.
2,4,6-Tribromophenol	56.	60.	50.
D14-Terphenyl	86.	71.	25.

ND = Not Detected.

CLIENT: ERM Northwest, Inc.

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88

REPORT TO: Pat Wicks

PROJECT NO.: 36-88

Laboratory Sample No. 823987
Spike

Client Identification F#1 Hard Pan Comp

Matrix Spike Compounds	Recovery (%)	Amount Residue (ug/g)	Amount Expected (ug/g)
2-Clorophenol	74.	37.2	50.
Phenol	74.	36.9	50.
1,4-Dichlorobenzene	66.	16.4	25.
N-Nitrosodipropylamine	60.	14.9	25.
1,2,4-Trichlorobenzene	58.	14.5	25.
4-Chloro-3-Methylphenol	70.	34.9	50.
Acenaphthene	84.	20.9	25.
2,4-Dinitrotoluene	31.	7.7	25.
4-Nitrophenol	30.	14.9	50.
Pentachlorophenol	46.	23.1	50.
Di-N-Butylphthalate	72.	18.	25.
Pyrene	94.	23.6	25.

Surrogate Compounds	Recovery (%)	Amount Spiked (ug/kg)	Amount Found (ug/kg)
2-Fluorophenol	88.	50.	43.9
D6-Phenol	80.	50.	39.9
D5-Nitrobenzene	60.	25.	15.
2-Fluorobiphenyl	82.	25.	20.4
2,4,6-Tribromophenol	84.	50.	41.8
D14-Terphenyl	96.	25.	24.

DATE REPORTED

John A. Hicks

JAH/pb

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos. Client Identification	BNA Method Blank	823987 F#1 Hard Pan Comp.	DETECTION LIMIT (ug/kg)
Aniline	ND	ND	33.3
2-Chlorophenol	ND	ND	33.3
Bis (2-Chloroethyl) Ether	ND	ND	33.3
Phenol	ND	ND	33.3
1,3-Dichlorobenzene	ND	ND	33.3
1,4-Dichlorobenzene	ND	ND	33.3
1,2-Dichlorobenzene	ND	ND	33.3
Benzyl Alcohol	ND	ND	33.3
Bis (2-Chloroisopropyl) Ether	ND	ND	33.3
2-Methyl Phenol	ND	ND	33.3
Hexachloroethane	ND	ND	33.3
N-Nitrosodipropylamine	ND	ND	33.3
Nitrobenzene	ND	ND	33.3
4-Methylphenol	ND	ND	33.3
Isopherone	ND	ND	33.3
2-Nitrophenol	ND	ND	33.3
2,4-Dimethylphenol	ND	ND	33.3
Bis (2-Chloroethoxy) Methane	ND	ND	33.3
2,4-Dichlorophenol	ND	ND	33.3
1,2,4-Trichlorobenzene	ND	ND	33.3
Naphthalene	ND	ND	166.7
Benzoic Acid	ND	ND	33.3
4-Chloroaniline	ND	ND	33.3
Hexachlorobutadiene	ND	ND	33.3
2-Methylnaphthalene	ND	ND	33.3
4-Chloro-3-Methylphenol	ND	ND	33.3
Hexachlorocyclopentadiene	ND	ND	66.7
2,4,6-Trichlorophenol	ND	ND	66.7
2,4,5-Trichlorophenol	ND	ND	66.7

ND = Not Detected.
All values are reported in ug/kg.

PW 30001147

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos. Client Identification	BNA Method Blank	823987 F#1 Hard Pan Comp.	DETECTION LIMIT (ug/kg)
2-Chloronaphthalene	ND	ND	33.3
2-Nitroaniline	ND	ND	33.3
Acenaphthylene	ND	ND	33.3
Dimethyl Phthalate	ND	ND	33.3
2,6-Dinitrotoluene	ND	ND	66.7
Acenaphthene	ND	ND	33.3
3-Nitroaniline	ND	ND	66.7
2,4-Dinitrophenol	ND	ND	166.7
Dibenzofuran	ND	ND	33.3
2,4-Dinitrotoluene	ND	ND	66.7
4-Nitrophenol	ND	ND	133.3
Fluorene	ND	ND	33.3
4-Chlorophenyl Phenyl Ether	ND	ND	33.3
Diethyl Phthalate	ND	ND	33.3
4-Nitroaniline	ND	ND	100.0
2-Methyl-4,6-Dinitrophenol	ND	ND	166.7
N-Nitrosodiphenylamine	ND	ND	33.3
Azobenzene	ND	ND	33.3
4-Bromophenyl Phenyl Ether	ND	ND	66.7
Hexachlorobenzene	ND	ND	66.7
Pentachlorophenol	ND	ND	166.7
Phenanthrene	ND	ND	33.3
Anthracene	ND	ND	33.3
Di-N-Butyl Phthalate	ND	ND	33.3
Fluoranthene	ND	ND	33.3
Pyrene	ND	ND	33.3
Benzidine	ND	ND	100.0
Benzyl Butyl Phthalate	ND	ND	33.3
Benzo (a) Anthracene	ND	ND	33.3

ND = Not Detected.
All values are reported in ug/kg.

PW 30001148

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos.	BNA Method Blank	823987 F#1 Hard Pan Comp.
Client Identification		

Compound	Concentration (ug/kg)		DETECTION LIMIT (ug/kg)
Chrysene	ND	ND	33.3
3,3-Dichlorobenzidine	ND	ND	100.0
Bis (2-Ethylhexyl) Phthalate	ND	40.0	33.3
Di-N-Octyl Phthalate	ND	ND	33.3
Benzo (b) Fluoranthene	ND	ND	33.3
Benzo (k) Fluoranthene	ND	ND	33.3
Benzo (a) Pyrene	ND	ND	33.3
Indeno (1,2,3-cd) Pyrene	ND	ND	33.3
Dibenzo (a,h) Anthracene	ND	ND	33.3
Benzo (g,h,i) Perylene	ND	ND	33.3

Surrogate Compounds	Recovery (%)		AMOUNT SPIKED (ug/kg)
2-Fluorophenol	81.	79.	50.
D6-Phenol	69.	71.	50.
D5-Nitrobenzene	69.	51.	25.
2-Fluorobiphenyl	73.	77.	25.
2,4,6-Tribromophenol	65.	69.	50.
D14-Terphenyl	90.	65.	25.

ND = Not Detected.

Blue hi-lites not entered yet - I wasn't sure where to put them.

PW 30001149

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos. Client Identification	823986 Duplicate F#1 Carbon Block Comp	823986 F#1 Carbon Block Comp	DETECTION LIMIT (ug/kg)
Aniline	ND	ND	33.3
2-Chlorophenol	ND	ND	33.3
Bis (2-Chloroethyl) Ether	ND	ND	33.3
Phenol	ND	ND	33.3
1,3-Dichlorobenzene	ND	ND	33.3
1,4-Dichlorobenzene	ND	ND	33.3
1,2-Dichlorobenzene	ND	ND	33.3
Benzyl Alcohol	ND	ND	33.3
Bis (2-Chloroisopropyl) Ether	ND	ND	33.3
2-Methyl Phenol	ND	ND	33.3
Hexachloroethane	ND	ND	33.3
N-Nitrosodipropylamine	ND	ND	33.3
Nitrobenzene	ND	ND	33.3
4-Methylphenol	ND	ND	33.3
Isopherone	ND	ND	33.3
2-Nitrophenol	ND	ND	33.3
2,4-Dimethylphenol	ND	ND	33.3
Bis (2-Chloroethoxy) Methane	ND	ND	33.3
2,4-Dichlorophenol	ND	ND	33.3
1,2,4-Trichlorobenzene	ND	ND	33.3
Naphthalene	ND	ND	166.7
Benzoic Acid	ND	ND	33.3
4-Chloroaniline	ND	ND	33.3
Hexachlorobutadiene	ND	ND	33.3
2-Methylnaphthalene	ND	ND	33.3
4-Chloro-3-Methylphenol	ND	ND	33.3
Hexachlorocyclopentadiene	ND	ND	66.7
2,4,6-Trichlorophenol	ND	ND	66.7
2,4,5-Trichlorophenol	ND	ND	66.7

ND = Not Detected.
All values are reported in ug/kg.

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos. Client Identification	823986 Duplicate F#1 Carbon Block Comp	823986 F#1 Carbon Block Comp	DETECTION LIMIT (ug/kg)
2-Chloronaphthalene	ND	ND	33.3
2-Nitroaniline	ND	ND	33.3
Acenaphthylene	ND	ND	33.3
Dimethyl Phthalate	ND	ND	33.3
2,6-Dinitrotoluene	ND	ND	66.7
Acenaphthene	ND	ND	33.3
3-Nitroaniline	ND	ND	66.7
2,4-Dinitrophenol	ND	ND	166.7
Dibenzofuran	ND	ND	33.3
2,4-Dinitrotoluene	ND	ND	66.7
4-Nitrophenol	ND	ND	133.3
Fluorene	ND	ND	33.3
4-Chlorophenyl Phenyl Ether	ND	ND	33.3
Diethyl Phthalate	ND	ND	33.3
4-Nitroaniline	ND	ND	100.0
2-Methyl-4,6-Dinitrophenol	ND	ND	166.7
N-Nitrosodiphenylamine	ND	ND	33.3
Azobenzene	ND	ND	33.3
4-Bromophenyl Phenyl Ether	ND	ND	66.7
Hexachlorobenzene	ND	ND	66.7
Pentachlorophenol	ND	ND	166.7
Phenanthrene	ND	ND	33.3
Anthracene	ND	ND	33.3
Di-N-Butyl Phthalate	36.7	43.3	33.3
Fluoranthene	ND	ND	33.3
Pyrene	ND	ND	33.3
Benzidine	ND	ND	100.0
Benzyl Butyl Phthalate	ND	ND	33.3
Benzo (a) Anthracene	ND	ND	33.3

ND = Not Detected.
All values are reported in ug/kg.

CLIENT: ERM Northwest, Inc.

REPORT TO: Pat Wicks

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88
PROJECT NO.: 36-88

Laboratory Sample Nos.	823986 Duplicate	823986
Client Identification	F#1 Carbon Block Comp	F#1 Carbon Block Comp

Compound	Concentration (ug/kg)		DETECTION LIMIT (ug/kg)
Chrysene	ND	ND	33.3
3,3-Dichlorobenzidine	ND	ND	100.0
Bis (2-Ethylhexyl) Phthalate	43.3	60.0	33.3
Di-N-Octyl Phthalate	ND	ND	33.3
Benzo (b) Fluoranthene	ND	ND	33.3
Benzo (k) Fluoranthene	ND	ND	33.3
Benzo (a) Pyrene	ND	ND	33.3
Indeno (1,2,3-cd) Pyrene	ND	ND	33.3
Dibenzo (a,h) Anthracene	ND	ND	33.3
Benzo (g,h,i) Perylene	ND	ND	33.3

Surrogate Compounds	Recovery (%)		AMOUNT SPIKED (ug/kg)
2-Fluorophenol	82.	72.	50.
D6-Phenol	75.	65.	50.
D5-Nitrobenzene	66.	56.	25.
2-Fluorobiphenyl	81.	74.	25.
2,4,6-Tribromophenol	56.	60.	50.
D14-Terphenyl	86.	71.	25.

ND = Not Detected.

CLIENT: ERM Northwest, Inc.

DATE RECEIVED: 11/29/88
DATE REPORTED: 12/7/88

REPORT TO: Pat Wicks

PROJECT NO.: 36-88

Laboratory Sample No.	823987
Client Identification	Spike F#1 Hard Pan Comp

Matrix Spike Compounds	Recovery (%)	Amount Residue (ug/g)	Amount Expected (ug/g)
2-Clorophenol	74.	37.2	50.
Phenol	74.	36.9	50.
1,4-Dichlorobenzene	66.	16.4	25.
N-Nitrosodipropylamine	60.	14.9	25.
1,2,4-Trichlorobenzene	58.	14.5	25.
4-Chloro-3-Methylphenol	70.	34.9	50.
Acenaphthene	84.	20.9	25.
2,4-Dinitrotoluene	31.	7.7	25.
4-Nitrophenol	30.	14.9	50.
Pentachlorophenol	46.	23.1	50.
Di-N-Butylphthalate	72.	18.	25.
Pyrene	94.	23.6	25.

Surrogate Compounds	Recovery (%)	Amount Spiked (ug/kg)	Amount Found (ug/kg)
2-Fluorophenol	88.	50.	43.9
D6-Phenol	80.	50.	39.9
D5-Nitrobenzene	60.	25.	15.
2-Fluorobiphenyl	82.	25.	20.4
2,4,6-Tribromophenol	84.	50.	41.8
D14-Terphenyl	96.	25.	24.

DATE REPORTED

John A. Hicks

JAH/pb

PW 30001153

Response to EPA Ferroalloy NESHAP Information Collection Request

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Environmental
Engineering &
Consulting, Inc.

October 21, 1992

Mr. Conrad K. Chin
Environmental Engineer
Industrial Studies Branch
Office of Air Quality Planning and Standards
U S Environmental Protection Agency
Research Triangle Park, N C 27711

Dear Mr. Chin:

Enclosed are the completed NESHAP request for information with Tables 1, 2 (3 sets), 3-A, 3-B and 4, Figure 1 (process flow diagram) and seven page process flow calculations summary for Silicon Metaltech, Inc. at Rock Island, Washington.

This information is submitted in response to EPA's letter of July 9, 1992 from Mr. Bruce C. Jordan of your office to Mr. Jim Trunzo of Silicon Metaltech, Inc.

We appreciate extensions of your deadline that were allowed in your August 18 letter and subsequent telephone conversations.

We hope this information will be satisfactory for your purposes. Please do not hesitate to call me or Mr. Trunzo if there are any questions.

Sincerely,

Patrick H. Wicks, PE, CHMM
President

Enclosures

cc: Mr. Jim Trunzo
With Silicon Metaltech, Inc.
Enclosures 100 4th Street
Rock Island, Washington 98850

Without Mr. Bruce C. Jordan
Enclosures Office of Air Quality Planning and Standards
U S Environmental Protection Agency
Research Triangle Park, N C 27711

19125 Northcreek Parkway, Suite 111 Bothell, WA 98011-8002 206.485.3437 FAX 206.483.1058

Enclosure 1

Ferroalloy Industry NESHAP
Information Collection Request

U.S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Emissions Standards Division

June 1992

For questions, contact Jeffrey Telander
at (919) 541-5427

Form Approved
OMB No. 2060-0239
Approval Expires: 03/31/95

MAXIMUM ACHIEVABLE CONTROL TECHNOLOGY (MACT) STANDARDS DEVELOPMENT INFORMATION REQUEST

I. Instructions

This information request is to be completed for operations that comprise ferroalloys production at your plant. The ferroalloys production source category includes any facility engaged in producing ferroalloys such as ferrosilicon, silicon metal, ferromanganese, and ferrochrome.

A ferroalloy is typically an alloy of iron and one or more other elements, such as silicon, manganese, or chromium; however, the ferroalloy source category also includes metals that don't contain iron but are used in the primary metals industry. Ferroalloys are typically used as additives to impart unique properties to steel and cast iron.

Ferroalloys production includes, but is not limited to, the following operations: ore unloading, ore storage, sintering, crushing, weigh-feeding, smelting, tapping, casting, and screening. The smelting process can be performed in a variety of furnace types including, but not limited to: submerged arc furnaces, induction furnaces, vacuum furnaces, exothermic reaction furnaces, and electrolytic cells.

We are requesting information regarding each compound identified as a hazardous air pollutant (HAP) that is used in or emitted by any operations, including fugitive emission sources, occurring from the furnaces, ore storage and handling, and product storage and handling operations at your facility. Fill out this information request as completely as possible from existing information. At a minimum, provide (1) information on the presence of HAP emissions and (2) HAP emission estimates based on previously obtained test data or on engineering calculations provided there is a basis for such calculations. No additional monitoring or emission testing is required by your company to respond to this request.

For your convenience, we have provided in Attachment 1 additional information on the scope and purpose of this survey. Respondents should read this material before attempting to complete the survey. Attachment 2 is a copy of an example figure and example tables for the survey. Refer to these examples in completing your response. If you have any questions regarding this request, please contact Jeffrey Telander at (919) 541-5427.

Return this information request and any additional information to:

Emission Standards Division (MD-13)
U. S. Environmental Protection Agency
Office of Air Quality Planning and Standards
Research Triangle Park, NC 27711

Attention: Bruce C. Jordan, Director

II. General Information

A. Name of legal owner of plant: SILICON METALTECH, INC.

B. Name of legal operator of plant, if different from legal owner: _____

C. Address of legal owner/operator (please specify which): 100 - 4th Street
ROCK ISLAND, WA 98850

D. Size of Company

1. Approximate number of employees of the business enterprise that owns this plant, including where applicable, the parent company and all

subsidiaries, branches, and unrelated establishments owned by the parent company (answer may be given using the following ranges: 0-100; 101-250; 251-500; 501-750; 751-1,000; 1,001-1,500; and >1,500)

0 - 100

2. Number of plant employees attached to the ferroalloy operation:

0 - 100

E. Name of plant: SILICON METALTECH

F. Street address of plant: Same as legal owner

G. Latitude and longitude coordinates of plant (see Appendix A of Attachment 1):

47° 21' 55" North, 120° 8' 20" West

H. Name of contact(s) able to answer technical questions about the completed survey:

Jim Trunzo, President, 509-884-4009

I. Title(s): Pat Wicks, Consultant, 206-485-3437

J. Telephone Number: (_____)

III. Plant Operations

A. Complete Table 1 (page 8) for the most recent calendar year (unless the respondent can justify selection of an alternate base year) for all processes at your plant that are covered by the ferroalloy source category. For each type of process (i.e., process line), provide a process flow diagram that includes all sources of air emissions (e.g., stack emissions, process fugitive emissions, and area fugitive emissions [including fugitive dust emissions]). Also include all activities that generate HAP emissions, including the storage, transfer, handling, and processing of the materials, and wastewater and solid waste handling. Indicate all feedstocks, products, and emissions that contain compounds that are listed in Table 2 (pages 9-15), below. Use the same terminology/codes in identifying unit operations and emissions points in this figure as you will use in completing Table 3 (pages 16-17), below.

B. List the products, coproducts, and by-products identified in the process flow diagram and indicate for each how much is produced annually.

Si Metal (@98.9% Si)	-	13,076 tons in CY1991
Dross	-	1,364 tons in CY1991
Fume	-	3,357 tons in CY1991

IV. HAP's--Usage and Emissions

A. Complete Table 2 (pages 9-15) for each emission point identified in the process flow diagram(s) developed for Part III.A., above. For each HAP listed on the table, indicate the likelihood, using the codes defined in Table 2, that the HAP is emitted from a given emission point within the source category. Identify the appropriate emission points using the same terminology/codes you used in completing the process flow diagram(s) in Part III.A, above.

B. Using copies of Tables 3A (page 16) and 3B (page 17), complete the table for each process and emission point identified in Part III, with the following exceptions.

1. For those emission points from units with Resource Conservation and Recovery Act (RCRA) Part B permits, it is not necessary to complete Table 3 for wastewater and solid waste handling operations;

2. Sources with no air pollution capture or control systems will only complete columns 1-3, 8, and 10 of Table 3-A; and

3. Provide HAP data only for those HAP's identified with code "A" in Table 2, above.

C. Complete Table 4 (pages 18-25) for any air pollution capture or control equipment identified in Table 3, above.

D. For calculations based on emission factors, material balances, or engineering principles, submit a step-by-step description of the calculations, including assumptions used, and a brief rationale for the

validity of the calculation method used. (See guidance documents listed in Attachment 1, Section IV). If test reports are listed as the basis for emissions estimates or capture system and control device efficiencies, provide a brief summary of the relevant tests. Include information such as the purpose of the test, when it was conducted, what test methods were used, and information on the process operation during the test. It is not necessary to submit copies of actual test reports at this time although EPA may request additional documentation on a plant-specific basis in the future.

V. Factors That Affect HAP Emission Reductions

Completion of Section V is optional. If you choose to respond, clearly distinguish between pollution reduction and source reduction measures. Pollution reduction measures alter the physical, chemical, or biological characteristics or the volume of a HAP through a process or activity which itself is not integral to and necessary to produce a product or provide a service. The use of "add-on" devices to capture and control (recover or destroy) HAP emissions are considered pollution reduction measures. In contrast, source reduction measures reduce the amount of any HAP prior to recycling, treatment, or disposal. Source reduction measures include equipment or technology modifications, process or procedure modifications, reformulation or redesign of products, substitution of raw materials, and improvements in housekeeping, maintenance, training, or inventory control.

A. For each unit operation for which pollution reduction or source reduction measures have resulted in a decrease in HAP emissions since 1987, provide the following information (use separate sheets if necessary).

1. Name of unit operation: _____

2. Type of control or description of process change:

_____

_____

B. If recovery or recycling of feedstocks is used, quantify the effect of the program (e.g., estimated

annual purchase of feedstock in the absence of recovery/recycling compared to actual annual purchase):

C. Are you aware of any alternative processes (feedstock substitutions or eliminations) or control devices that could result in fewer impacts transferred between environmental media (water, air, and land) or reduced total release to all environmental media (e.g., reduced wastewater or solid waste)? Discuss whether these processes could be adapted to the ferroalloy source category and any experience you have with them.

Yes; DC Power Technology utilizing closed furnace design; commercialization expected to be 5 to 10 years away.

VI. Miscellaneous

A. If any control or process change described in Part V was instituted as a result of new source review requirements pursuant to 40 CFR 51.160, Subpart I, Review of New Sources and Modifications, provide the date at which the lowest achievable emission rate (LAER) came into effect:

B. Describe any factors not addressed in the above questions that might serve to distinguish your facility from others in this source category for purposes of developing a separate source category or subcategory and MACT standards.

TABLE 1. SUMMARY OF PROCESS LINES FOR FERROALLOY SOURCE CATEGORY

Process lines using and/or emitting HAP's	No. of lines	Average annual production, tons/year[a]	Operating cycle		Maximum annual production capacity, tons/yr[a]	Age of furnace, years	Remaining economic life of furnace, years *
			hr/d	d/yr			
Silicon Mfg.	1	13,076	24	358		F1= 50	F1=3-10
						F2= 50	F2=3-10
						F3= 50	F3=3-10

[a]Provide production in appropriate units, e.g., tons/year.

* Shorter life is if little or no money spent to maintain; longer life if moderate investment to keep up furnaces.

8

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Raw Materials Handling & Silicon Arc Furnaces 1–3

CHEMICAL NAME	Emission Points –>	E1	E2	E3	CS1	F1	E4	CS2	F2	E5				
ACETALDEHYDE														
ACETAMIDE														
ACETONITRILE														
ACETOPHENONE														
2-ACETYLAMINOFLUORENE														
ACROLEIN														
ACRYLAMIDE														
ACRYLIC ACID														
ACRYLONITRILE														
ALLYL CHLORIDE														
4-AMINOBIPHENYL														
ANILINE					B	B				B				
o-ANISIDINE														
ASBESTOS														
BENZENE(INCLUDING BENZENE FROM GASOLINE)					B	B								
BENZIDINE					B	B				B				
BENZOTRICHLORIDE														
BENZYL CHLORIDE														
BIPHENYL														
BIS(2-ETHYLHEXYL)PHTHALATE (DEHP)					B	B								
BIS(CHLOROMETHYL)ETHER														
BROMOFORM					B	B								
1,3-BUTADIENE														
CALCIUM CYANAMIDE														
CAPROLACTAM														
CAPTAN														
CARBARYL														
CARBON DISULFIDE														

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

A - Specific HAP is known to be emitted.
B - Specific HAP is known not to be emitted.
C - No reason or data to assume that this HAP is emitted.
D - HAP is believed to be emitted, but no data exists.

All blank cells assumed to be "C's."

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Raw Materials Handling & Silicon Arc Furnaces 1–3

Emission Points –>	E1	E2	E3	CS1	F1	E4	CS2	F2	E5				
CARBON TETRACHLORIDE				B	B								
CARBONYL SULFIDE													
CATECHOL													
CHLORAMBEN													
CHLORDANE				B	B								
CHLORINE													
CHLOROACETIC ACID													
2-CHLOROACETOPHENONE													
CHLOROBENZENE				B	B								
CHLOROBENZILATE													
CHLOROFORM				B	B								
CHLOROMETHYL METHYL ETHER													
CHLOROPRENE													
CRESOLS/CRESYLIC ACID (ISOMERS AND MIXTURE)				B	B								
o-CRESOL													
m-CRESOL													
p-CRESOL													
CUMENE													
2,4-D, SALTS AND ESTERS													
DDE				B	B								
DIAZOMETHANE													
DIBENZOFURANS				B	B								
1,2-DIBROMO-3-CHLOROPROPANE													
DIBUTYLPHTHALATE				B	B								
1,4-DICHLOROBENZENE(P)				B	B								
3,3-DICHLOROBENZIDENE				B	B								
DICHLOROETHYL ETHER (BIS(2-CHLOROETHYL)ETHER)				B	B								
1,3-DICHLOROPROPENE				B	B								
DICHLORVOS													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

A - Specific HAP is known to be emitted.
B - Specific HAP is known not to be emitted.
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All blank cells assumed to be "C's."

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Raw Materials Handling & Silicon Arc Furnaces 1–3

	Emission Points –>	E1	E2	E3	CS1	F1	E4	CS2	F2	E5				
DIETHANOLAMINE														
N,N-DIETHYL ANILINE (N,N-DIMETHYLANILINE)														
DIETHYL SULFATE														
3,3-DIMETHOXYBENZIDINE														
DIMETHYL AMINOAZOBENZENE														
3,3'-DIMETHYL BENZIDINE														
DIMETHYL CARBAMOYL CHLORIDE														
DIMETHYL FORMAMIDE														
1,1-DIMETHYL HYDRAZINE														
DIMETHYL PHTHALATE					B	B				B				
DIMETHYL SULFATE														
4,6-DINITRO-O-CRESOL, AND SALTS														
2,4-DINITROPHENOL					B	B				B				
2,4-DINITROTOLUENE					B	B				B				
1,4-DIOXANE(1,4-DIETHYLENEOXIDE)														
1,2-DIPHENYLHYDRAZINE														
EPICHLOROHYDRIN(1-CHLORO-2,3-EPOXYPROPANE)														
1,2-EPOXYBUTANE														
ETHYL ACRYLATE														
ETHYL BENZENE					B	B								
ETHYL CARBAMATE (URETHANE)														
ETHYL CHLORIDE (CHLOROETHANE)					B	B								
ETHYLENE DIBROMIDE (DIBROMOETHANE)														
ETHYLENE DICHLORIDE (1,2-DICHLOROETHANE)					B	B								
ETHYLENE GLYCOL														
ETHYLENE IMINE(AZIRIDINE)														
ETHYLENE OXIDE														
ETHYLENE THIOUREA														
ETHYLIDENE DICHLORIDE (1,1-DICHLOROETHANE)					B	B								

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

A - Specific HAP is known to be emitted.
B - Specific HAP is known not to be emitted.
C - No reason or data to assume that this HAP is emitted.
D - HAP is believed to be emitted, but no data exists.

All blank cells assumed to be "C's."

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Raw Materials Handling & Silicon Arc Furnaces 1–3

Emission Points –>	E1	E2	E3	CS1	F1	E4	CS2	F2	E5				
FORMALDEHYDE													
HEPTACHLOR				B	B								
HEXACHLOROBENZENE				B	B				B				
HEXACHLOROBUTADIENE				B	B				B				
HEXACHLOROCYCLOPENTADIENE				B	B				B				
HEXACHLOROETHANE				B	B				B				
HEXAMETHYLENE-1,6-DIISO-CYANATE													
HEXAMETHYLPHOSPHORAMIDE													
HEXANE													
HYDRAZINE													
HYDROCHLORIC ACID													
HYDROGEN FLUORIDE (HYDROFLUORIC ACID)													
HYDROGEN SULFIDE													
HYDROQUINONE													
ISOPHORONE													
LINDANE (ALL ISOMERS)				B	B								
MALEIC ANHYDRIDE													
METHANOL													
METHOXYCHLOR													
METHYL BROMIDE (BROMOMETHANE)				B	B								
METHYL CHLORIDE (CHLOROMETHANE)				B	B								
METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE)				B	B								
METHYL ETHYL KETONE (2-BUTANONE)				B	B								
METHYL HYDRAZINE													
METHYL IODIDE (IODOMETHANE)													
METHYL ISOBUTYL KETONE (HEXONE)				B	B								
METHYL ISOCYANATE													
METHYL METHACRYLATE													
METHYL TERT BUTYL ETHER													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

A - Specific HAP is known to be emitted.
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C - No reason or data to assume that this HAP is emitted.
D - HAP is believed to be emitted, but no data exists.

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Raw Materials Handling & Silicon Arc Furnaces 1–3

Emission Points –>	E1	E2	E3	CS1	F1	E4	CS2	F2	E5				
4,4-METHYLENE BIS(2-CHLOROANILINE)													
METHYLENE CHLORIDE (DICHLOROMETHANE)				B	B								
METHYLENE DIPHENYL DIISOCYANATE (MDI)													
4,4'-METHYLENEDIANILINE													
NAPHTHALENE				B	B				B				
NITROBENZENE				B	B				B				
4-NITROBIPHENYL													
4-NITROPHENOL				B	B				B				
2-NITROPROPANE													
N-NITROSO-N-METHYLUREA													
N-NITROSODIMETHYLAMINE				B	B								
N-NITROSOMORPHOLINE													
PARATHION													
PENTACHLORONITROBENZENE (QUINTOBENZENE)													
PENTACHLOROPHENOL				B	B				B				
PHENOL				B	B				B				
p-PHENYLENEDIAMINE													
PHOSGENE													
PHOSPHINE													
PHOSPHOROUS													
PHTHALIC ANHYDRIDE													
POLYCHLORINATED BIPHENYLS (AROCHLORS)													
1,3-PROPANE SULTONE													
BETA-PROPIOLACTONE													
PROPIONALDEHYDE													
PROPOXUR (BAYGON)													
PROPYLENE DICHLORIDE (1,2-DICHLOROPROPANE)				B	B								
PROPYLENE OXIDE													
1,2-PROPYLENIMINE (2-METHYL AZIRIDINE)													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

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All blank cells assumed to be "C's."

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Raw Materials Handling & Silicon Arc Furnaces 1–3

Emission Points –>	E1	E2	E3	CS1	F1	E4	CS2	F2	E5				
QUINOLINE													
QUINONE													
STYRENE				B	B								
STYRENE OXIDE													
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN													
1,1,2,2-TETRACHLOROETHANE				B	B								
TETRACHLOROETHYLENE (PERCHLOROETHYLENE)				B	B								
TITANIUM TETRACHLORIDE													
TOLUENE				B	B								
2,4-TOLUENE DIAMINE													
2,4-TOLUENE DIISOCYANATE													
o-TOLUIDINE													
TOXAPHENE (CHLORINATED CAMPHENE)				B	B								
1,2,4-TRICHLOROBENZENE				B	B								
1,1,2-TRICHLOROETHANE				B	B								
TRICHLOROETHYLENE													
2,4,5-TRICHLOROPHENOL													
2,4,6-TRICHLOROPHENOL				B	B				B				
TRIETHYLAMINE													
TRIFLURALIN													
2,2,4-TRIMETHYLPENTANE													
VINYL ACETATE				B	B								
VINYL BROMIDE													
VINYL CHLORIDE				B	B								
VINYLIDENE CHLORIDE (1,1-DICHLOROETHYLENE)				B	B								
XYLENES (ISOMERS AND MIXTURE)				B	B								
o-XYLENES													
m-XYLENES													
p-XYLENES													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

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TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): **Raw Materials Handling & Silicon Arc Furnaces 1 – 3**

Emission Points –>	E1	E2	E3	CS1	F1	E4	CS2	F2	E5				
ANTIMONY COMPOUNDS				A	A	B	B	B	B				
ARSENIC COMPOUNDS (INORGANIC INCLUDING ARSINE)				A	A	B	B	B	B				
BERYLLIUM COMPOUNDS				B	B	B	B	B	B				
CADMIUM COMPOUNDS				A	A	B	B	B	B				
CHROMIUM COMPOUNDS				A	A	A	A	A	A				
COBALT COMPOUNDS				A	A	A	A	A					
COKE OVEN EMISSIONS													
CYANIDE COMPOUNDS				A	A				B				
GLYCOL ETHERS													
LEAD COMPOUNDS				A	A	B	B	B	B				
MANGANESE COMPOUNDS						A	A	A					
MERCURY COMPOUNDS				A	A	B	B	B	B				
FINE MINERAL FIBERS													
NICKEL COMPOUNDS				A	A	A	A	A	A				
POLYCYCLIC ORGANIC MATTER	D	D	D	B	B								
RADIONUCLIDES (INCLUDING RADON)													
SELENIUM COMPOUNDS				A	A	B	B	B	B				

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

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B - Specific HAP is known not to be emitted.
C - No reason or data to assume that this HAP is emitted.
D - HAP is believed to be emitted, but no data exists.

All blank cells assumed to be "C's."

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Fume Handling & Collection

CHEMICAL NAME	Emission Points –>	E6	BC1	E7	E8	E9	E11	E12	CS3	E10	BC2			
ACETALDEHYDE														
ACETAMIDE														
ACETONITRILE														
ACETOPHENONE														
2-ACETYLAMINOFLUORENE														
ACROLEIN														
ACRYLAMIDE														
ACRYLIC ACID														
ACRYLONITRILE														
ALLYL CHLORIDE														
4-AMINOBIPHENYL														
ANILINE		B	B	B	B	B	B	B	B	B	B			
o-ANISIDINE														
ASBESTOS														
BENZENE(INCLUDING BENZENE FROM GASOLINE)		B	B	B	B	B	B	B	B	B	B			
BENZIDINE		B	B	B	B	B	B	B	B	B	B			
BENZOTRICHLORIDE														
BENZYL CHLORIDE														
BIPHENYL														
BIS(2-ETHYLHEXYL)PHTHALATE (DEHP)		B	B	B	B	B	B	B	B	B	B			
BIS(CHLOROMETHYL)ETHER														
BROMOFORM		B	B	B	B	B	B	B	B	B	B			
1,3-BUTADIENE														
CALCIUM CYANAMIDE														
CAPROLACTAM														
CAPTAN														
CARBARYL														
CARBON DISULFIDE														

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

A - Specific HAP is known to be emitted.
B - Specific HAP is known not to be emitted.
C - No reason or data to assume that this HAP is emitted.
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All blank cells assumed to be "C's."

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Fume Handling & Collection

Emission Points –>	E6	BC1	E7	E8	E9	E11	E12	CS3	E10	BC2			
CARBON TETRACHLORIDE	B	B	B	B	B	B	B	B	B	B			
CARBONYL SULFIDE													
CATECHOL													
CHLORAMBEN													
CHLORDANE	B	B	B	B	B	B	B	B	B	B			
CHLORINE													
CHLOROACETIC ACID													
2-CHLOROACETOPHENONE													
CHLOROBENZENE	B	B	B	B	B	B	B	B	B	B			
CHLOROBENZILATE													
CHLOROFORM	B	B	B	B	B	B	B	B	B	B			
CHLOROMETHYL METHYL ETHER													
CHLOROPRENE													
CRESOLS/CRESYLIC ACID (ISOMERS AND MIXTURE)	B	B	B	B	B	B	B	B	B	B			
o-CRESOL													
m-CRESOL													
p-CRESOL													
CUMENE													
2,4-D, SALTS AND ESTERS													
DDE	B	B	B	B	B	B	B	B	B	B			
DIAZOMETHANE													
DIBENZOFURANS	B	B	B	B	B	B	B	B	B	B			
1,2-DIBROMO-3-CHLOROPROPANE													
DIBUTYLPHTHALATE	B	B	B	B	B	B	B	B	B	B			
1,4-DICHLOROBENZENE(P)	B	B	B	B	B	B	B	B	B	B			
3,3-DICHLOROBENZIDENE	B	B	B	B	B	B	B	B	B	B			
DICHLOROETHYL ETHER (BIS(2-CHLOROETHYL)ETHER)	B	B	B	B	B	B	B	B	B	B			
1,3-DICHLOROPROPENE	B	B	B	B	B	B	B	B	B	B			
DICHLORVOS													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

A - Specific HAP is known to be emitted.
B - Specific HAP is known not to be emitted.
C - No reason or data to assume that this HAP is emitted.
D - HAP is believed to be emitted, but no data exists.

All blank cells assumed to be "C's."

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Fume Handling & Collection

Emission Points –>	E6	BC1	E7	E8	E9	E11	E12	CS3	E10	BC2			
DIETHANOLAMINE													
N,N-DIETHYL ANILINE (N,N-DIMETHYLANILINE)													
DIETHYL SULFATE													
3,3-DIMETHOXYBENZIDINE													
DIMETHYL AMINOAZOBENZENE													
3,3'-DIMETHYL BENZIDINE													
DIMETHYL CARBAMOYL CHLORIDE													
DIMETHYL FORMAMIDE													
1,1-DIMETHYL HYDRAZINE													
DIMETHYL PHTHALATE	B	B	B	B	B	B	B	B	B	B			
DIMETHYL SULFATE													
4,6-DINITRO-O-CRESOL, AND SALTS													
2,4-DINITROPHENOL	B	B	B	B	B	B	B	B	B	B			
2,4-DINITROTOLUENE	B	B	B	B	B	B	B	B	B	B			
1,4-DIOXANE(1,4-DIETHYLENEOXIDE)													
1,2-DIPHENYLHYDRAZINE													
EPICHLOROHYDRIN(1-CHLORO-2,3-EPOXYPROPANE)													
1,2-EPOXYBUTANE													
ETHYL ACRYLATE													
ETHYL BENZENE	B	B	B	B	B	B	B	B	B	B			
ETHYL CARBAMATE (URETHANE)													
ETHYL CHLORIDE (CHLOROETHANE)	B	B	B	B	B	B	B	B	B	B			
ETHYLENE DIBROMIDE (DIBROMOETHANE)													
ETHYLENE DICHLORIDE (1,2-DICHLOROETHANE)	B	B	B	B	B	B	B	B	B	B			
ETHYLENE GLYCOL													
ETHYLENE IMINE(AZIRIDINE)													
ETHYLENE OXIDE													
ETHYLENE THIOUREA													
ETHYLIDENE DICHLORIDE (1,1-DICHLOROETHANE)	B	B	B	B	B	B	B	B	B	B			

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

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All blank cells assumed to be "C's."

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Fume Handling & Collection

Emission Points –>	E6	BC1	E7	E8	E9	E11	E12	CS3	E10	BC2			
FORMALDEHYDE													
HEPTACHLOR	B	B	B	B	B	B	B	B	B	B			
HEXACHLOROBENZENE	B	B	B	B	B	B	B	B	B	B			
HEXACHLOROBUTADIENE	B	B	B	B	B	B	B	B	B	B			
HEXACHLOROCYCLOPENTADIENE	B	B	B	B	B	B	B	B	B	B			
HEXACHLOROETHANE	B	B	B	B	B	B	B	B	B	B			
HEXAMETHYLENE-1,6-DIISO- CYANATE													
HEXAMETHYLPHOSPHORAMIDE													
HEXANE													
HYDRAZINE													
HYDROCHLORIC ACID													
HYDROGEN FLUORIDE (HYDROFLUORIC ACID)													
HYDROGEN SULFIDE													
HYDROQUINONE													
ISOPHORONE													
LINDANE (ALL ISOMERS)	B	B	B	B	B	B	B	B	B	B			
MALEIC ANHYDRIDE													
METHANOL													
METHOXYCHLOR													
METHYL BROMIDE (BROMOMETHANE)	B	B	B	B	B	B	B	B	B	B			
METHYL CHLORIDE (CHLOROMETHANE)	B	B	B	B	B	B	B	B	B	B			
METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE)	B	B	B	B	B	B	B	B	B	B			
METHYL ETHYL KETONE (2-BUTANONE)	B	B	B	B	B	B	B	B	B	B			
METHYL HYDRAZINE													
METHYL IODIDE (IODOMETHANE)													
METHYL ISOBUTYL KETONE (HEXONE)	B	B	B	B	B	B	B	B	B	B			
METHYL ISOCYANATE													
METHYL METHACRYLATE													
METHYL TERT BUTYL ETHER													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

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D - HAP is believed to be emitted, but no data exists.

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TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Fume Handling & Collection

Emission Points –>	E6	BC1	E7	E8	E9	E11	E12	CS3	E10	BC2			
4,4-METHYLENE BIS(2-CHLOROANILINE)													
METHYLENE CHLORIDE (DICHLOROMETHANE)	B	B	B	B	B	B	B	B	B	B			
METHYLENE DIPHENYL DIISOCYANATE (MDI)													
4,4'-METHYLENEDIANILINE													
NAPHTHALENE	B	B	B	B	B	B	B	B	B	B			
NITROBENZENE	B	B	B	B	B	B	B	B	B	B			
4-NITROBIPHENYL													
4-NITROPHENOL	B	B	B	B	B	B	B	B	B	B			
2-NITROPROPANE													
N-NITROSO-N-METHYLUREA													
N-NITROSODIMETHYLAMINE	B	B	B	B	B	B	B	B	B	B			
N-NITROSOMORPHOLINE													
PARATHION													
PENTACHLORONITROBENZENE (QUINTOBENZENE)													
PENTACHLOROPHENOL	B	B	B	B	B	B	B	B	B	B			
PHENOL	B	B	B	B	B	B	B	B	B	B			
p-PHENYLENEDIAMINE													
PHOSGENE													
PHOSPHINE													
PHOSPHOROUS													
PHTHALIC ANHYDRIDE													
POLYCHLORINATED BIPHENYLS (AROCHLORS)													
1,3-PROPANE SULTONE													
BETA-PROPIOLACTONE													
PROPIONALDEHYDE													
PROPOXUR (BAYGON)													
PROPYLENE DICHLORIDE (1,2-DICHLOROPROPANE)	B	B	B	B	B	B	B	B	B	B			
PROPYLENE OXIDE													
1,2-PROPYLENIMINE (2-METHYL AZIRIDINE)													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

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C - No reason or data to assume that this HAP is emitted.
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All blank cells assumed to be "C's."

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Fume Handling & Collection													
Emission Points –>	E6	BC1	E7	E8	E9	E11	E12	CS3	E10	BC2			
QUINOLINE													
QUINONE													
STYRENE	B	B	B	B	B	B	B	B	B	B			
STYRENE OXIDE													
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN													
1,1,2,2-TETRACHLOROETHANE	B	B	B	B	B	B	B	B	B	B			
TETRACHLOROETHYLENE (PERCHLOROETHYLENE)	B	B	B	B	B	B	B	B	B	B			
TITANIUM TETRACHLORIDE													
TOLUENE	B	B	B	B	B	B	B	B	B	B			
2,4-TOLUENE DIAMINE													
2,4-TOLUENE DIISOCYANATE													
o-TOLUIDINE													
TOXAPHENE (CHLORINATED CAMPHENE)	B	B	B	B	B	B	B	B	B	B			
1,2,4-TRICHLOROBENZENE	B	B	B	B	B	B	B	B	B	B			
1,1,2-TRICHLOROETHANE	B	B	B	B	B	B	B	B	B	B			
TRICHLOROETHYLENE													
2,4,5-TRICHLOROPHENOL													
2,4,6-TRICHLOROPHENOL	B	B	B	B	B	B	B	B	B	B			
TRIETHYLAMINE													
TRIFLURALIN													
2,2,4-TRIMETHYLPENTANE													
VINYL ACETATE	B	B	B	B	B	B	B	B	B	B			
VINYL BROMIDE													
VINYL CHLORIDE	B	B	B	B	B	B	B	B	B	B			
VINYLIDENE CHLORIDE (1,1-DICHLOROETHYLENE)	B	B	B	B	B	B	B	B	B	B			
XYLENES (ISOMERS AND MIXTURE)	B	B	B	B	B	B	B	B	B	B			
o-XYLENES													
m-XYLENES													
p-XYLENES													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

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TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Fume Handling & Collection

Emission Points –>	E6	BC1	E7	E8	E9	E11	E12	CS3	E10	BC2			
ANTIMONY COMPOUNDS	A	A	A	A	A	A	A	A	A	A			
ARSENIC COMPOUNDS (INORGANIC INCLUDING ARSINE)	A	A	A	A	A	A	A	A	A	A			
BERYLLIUM COMPOUNDS	B	B	B	B	B	B	B	B	B	B			
CADMIUM COMPOUNDS	A	A	A	A	A	A	A	A	A	A			
CHROMIUM COMPOUNDS	A	A	A	A	A	A	A	A	A	A			
COBALT COMPOUNDS	A	A	A	A	A	A	A	A	A	A			
COKE OVEN EMISSIONS													
CYANIDE COMPOUNDS	A	A	A	A	A	A	A	A	A	A			
GLYCOL ETHERS													
LEAD COMPOUNDS	A	A	A	A	A	A	A	A	A	A			
MANGANESE COMPOUNDS													
MERCURY COMPOUNDS	A	A	A	A	A	A	A	A	A	A			
FINE MINERAL FIBERS													
NICKEL COMPOUNDS	A	A	A	A	A	A	A	A	A	A			
POLYCYCLIC ORGANIC MATTER	B	B	B	B	B	B	B	B	B	B			
RADIONUCLIDES (INCLUDING RADON)													
SELENIUM COMPOUNDS	A	A	A	A	A	A	A	A	A	A			

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

A - Specific HAP is known to be emitted.
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TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Silicon Product Handling & Dross Handling

CHEMICAL NAME — Emission Points -->	E13	F3	CS4	E14	BC3	F4	CS5	BC4	E15	E16	F5	CS6	E17
ACETALDEHYDE													
ACETAMIDE													
ACETONITRILE													
ACETOPHENONE													
2-ACETYLAMINOFLUORENE													
ACROLEIN													
ACRYLAMIDE													
ACRYLIC ACID													
ACRYLONITRILE													
ALLYL CHLORIDE													
4-AMINOBIPHENYL													
ANILINE													
o-ANISIDINE													
ASBESTOS													
BENZENE(INCLUDING BENZENE FROM GASOLINE)													
BENZIDINE													
BENZOTRICHLORIDE													
BENZYL CHLORIDE													
BIPHENYL													
BIS(2-ETHYLHEXYL)PHTHALATE (DEHP)													
BIS(CHLOROMETHYL)ETHER													
BROMOFORM													
1,3-BUTADIENE													
CALCIUM CYANAMIDE													
CAPROLACTAM													
CAPTAN													
CARBARYL													
CARBON DISULFIDE													

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All blank cells assumed to be "C's."

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Silicon Product Handling & Dross Handling

Emission Points –>	E13	F3	CS4	E14	BC3	F4	CS5	BC4	E15	E16	F5	CS6	E17
CARBON TETRACHLORIDE													
CARBONYL SULFIDE													
CATECHOL													
CHLORAMBEN													
CHLORDANE													
CHLORINE													
CHLOROACETIC ACID													
2-CHLOROACETOPHENONE													
CHLOROBENZENE													
CHLOROBENZILATE													
CHLOROFORM													
CHLOROMETHYL METHYL ETHER													
CHLOROPRENE													
CRESOLS/CRESYLIC ACID (ISOMERS AND MIXTURE)													
o-CRESOL													
m-CRESOL													
p-CRESOL													
CUMENE													
2,4-D, SALTS AND ESTERS													
DDE													
DIAZOMETHANE													
DIBENZOFURANS													
1,2-DIBROMO-3-CHLOROPROPANE													
DIBUTYLPHTHALATE													
1,4-DICHLOROBENZENE(P)													
3,3-DICHLOROBENZIDENE													
DICHLOROETHYL ETHER (BIS(2-CHLOROETHYL)ETHER)													
1,3-DICHLOROPROPENE													
DICHLORVOS													

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TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Silicon Product Handling & Dross Handling

Emission Points -->	E13	F3	CS4	E14	BC3	F4	CS5	BC4	E15	E16	F5	CS6	E17
DIETHANOLAMINE													
N,N-DIETHYL ANILINE (N,N-DIMETHYLANILINE)													
DIETHYL SULFATE													
3,3-DIMETHOXYBENZIDINE													
DIMETHYL AMINOAZOBENZENE													
3,3'-DIMETHYL BENZIDINE													
DIMETHYL CARBAMOYL CHLORIDE													
DIMETHYL FORMAMIDE													
1,1-DIMETHYL HYDRAZINE													
DIMETHYL PHTHALATE													
DIMETHYL SULFATE													
4,6-DINITRO-O-CRESOL, AND SALTS													
2,4-DINITROPHENOL													
2,4-DINITROTOLUENE													
1,4-DIOXANE(1,4-DIETHYLENEOXIDE)													
1,2-DIPHENYLHYDRAZINE													
EPICHLOROHYDRIN(1-CHLORO-2,3-EPOXYPROPANE)													
1,2-EPOXYBUTANE													
ETHYL ACRYLATE													
ETHYL BENZENE													
ETHYL CARBAMATE (URETHANE)													
ETHYL CHLORIDE (CHLOROETHANE)													
ETHYLENE DIBROMIDE (DIBROMOETHANE)													
ETHYLENE DICHLORIDE (1,2-DICHLOROETHANE)													
ETHYLENE GLYCOL													
ETHYLENE IMINE(AZIRIDINE)													
ETHYLENE OXIDE													
ETHYLENE THIOUREA													
ETHYLIDENE DICHLORIDE (1,1-DICHLOROETHANE)													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

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TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Silicon Product Handling & Dross Handling

Emission Points –>	E13	F3	CS4	E14	BC3	F4	CS5	BC4	E15	E16	F5	CS6	E17
FORMALDEHYDE													
HEPTACHLOR													
HEXACHLOROBENZENE													
HEXACHLOROBUTADIENE													
HEXACHLOROCYCLOPENTADIENE													
HEXACHLOROETHANE													
HEXAMETHYLENE-1,6-DIISO-CYANATE													
HEXAMETHYLPHOSPHORAMIDE													
HEXANE													
HYDRAZINE													
HYDROCHLORIC ACID													
HYDROGEN FLUORIDE (HYDROFLUORIC ACID)													
HYDROGEN SULFIDE													
HYDROQUINONE													
ISOPHORONE													
LINDANE (ALL ISOMERS)													
MALEIC ANHYDRIDE													
METHANOL													
METHOXYCHLOR													
METHYL BROMIDE (BROMOMETHANE)													
METHYL CHLORIDE (CHLOROMETHANE)													
METHYL CHLOROFORM (1,1,1-TRICHLOROETHANE)													
METHYL ETHYL KETONE (2-BUTANONE)													
METHYL HYDRAZINE													
METHYL IODIDE (IODOMETHANE)													
METHYL ISOBUTYL KETONE (HEXONE)													
METHYL ISOCYANATE													
METHYL METHACRYLATE													
METHYL TERT BUTYL ETHER													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

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All blank cells are assumed to be "C".

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Silicon Product Handling & Dross Handling

Emission Points –>	E13	F3	CS4	E14	BC3	F4	CS5	BC4	E15	E16	F5	CS6	E17
4,4-METHYLENE BIS(2-CHLOROANILINE)													
METHYLENE CHLORIDE (DICHLOROMETHANE)													
METHYLENE DIPHENYL DIISOCYANATE (MDI)													
4,4'-METHYLENEDIANILINE													
NAPHTHALENE													
NITROBENZENE													
4-NITROBIPHENYL													
4-NITROPHENOL													
2-NITROPROPANE													
N-NITROSO-N-METHYLUREA													
N-NITROSODIMETHYLAMINE													
N-NITROSOMORPHOLINE													
PARATHION													
PENTACHLORONITROBENZENE (QUINTOBENZENE)													
PENTACHLOROPHENOL													
PHENOL													
p-PHENYLENEDIAMINE													
PHOSGENE													
PHOSPHINE													
PHOSPHOROUS													
PHTHALIC ANHYDRIDE													
POLYCHLORINATED BIPHENYLS (AROCHLORS)													
1,3-PROPANE SULTONE													
BETA-PROPIOLACTONE													
PROPIONALDEHYDE													
PROPOXUR (BAYGON)													
PROPYLENE DICHLORIDE (1,2-DICHLOROPROPANE)													
PROPYLENE OXIDE													
1,2-PROPYLENIMINE (2-METHYL AZIRIDINE)													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

A - Specific HAP is known to be emitted.
B - Specific HAP is known not to be emitted.
C - No reason or data to assume that this HAP is emitted.
D - HAP is believed to be emitted, but no data exists.

All blank cells assumed to be "C's."

TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): Silicon Product Handling & Dross Handling

Emission Points –>	E13	F3	CS4	E14	BC3	F4	CS5	BC4	E15	E16	F5	CS6	E17
QUINOLINE													
QUINONE													
STYRENE													
STYRENE OXIDE													
2,3,7,8-TETRACHLORODIBENZO-p-DIOXIN													
1,1,2,2-TETRACHLOROETHANE													
TETRACHLOROETHYLENE (PERCHLOROETHYLENE)													
TITANIUM TETRACHLORIDE													
TOLUENE													
2,4-TOLUENE DIAMINE													
2,4-TOLUENE DIISOCYANATE													
o-TOLUIDINE													
TOXAPHENE (CHLORINATED CAMPHENE)													
1,2,4-TRICHLOROBENZENE													
1,1,2-TRICHLOROETHANE													
TRICHLOROETHYLENE													
2,4,5-TRICHLOROPHENOL													
2,4,6-TRICHLOROPHENOL													
TRIETHYLAMINE													
TRIFLURALIN													
2,2,4-TRIMETHYLPENTANE													
VINYL ACETATE													
VINYL BROMIDE													
VINYL CHLORIDE													
VINYLIDENE CHLORIDE (1,1-DICHLOROETHYLENE)													
XYLENES (ISOMERS AND MIXTURE)													
o-XYLENES													
m-XYLENES													
p-XYLENES													

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

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TABLE 2. PRESENCE OF HAZARDOUS AIR POLLUTANTS IN EMISSION POINTS[a]

Process name (as defined on process flow diagram): **Silicon Product Handling & Dross Handling**

Emission Points –>	E13	F3	CS4	E14	BC3	F4	CS5	BC4	E15	E16	F5	CS6	E17
ANTIMONY COMPOUNDS		B	B	B	B	B	B	B	B	B			
ARSENIC COMPOUNDS (INORGANIC INCLUDING ARSINE)		B	B	B	B	B	B	B	B	B			
BERYLLIUM COMPOUNDS		B	B	B	B	B	B	B	B	B			
CADMIUM COMPOUNDS		B	B	B	B	B	B	B	B	B			
CHROMIUM COMPOUNDS		A	A	A	A	A	A	A	A	A			
COBALT COMPOUNDS		A	A	A	A	A	A	A	A	A			
COKE OVEN EMISSIONS													
CYANIDE COMPOUNDS													
GLYCOL ETHERS													
LEAD COMPOUNDS		B	B	B	B	B	B	B	B	B			
MANGANESE COMPOUNDS		A	A	A	A	A	A	A	A	A			
MERCURY COMPOUNDS		B	B	B	B	B	B	B	B	B			
FINE MINERAL FIBERS													
NICKEL COMPOUNDS		A	A	A	A	A	A	A	A	A			
POLYCYCLIC ORGANIC MATTER													
RADIONUCLIDES (INCLUDING RADON)													
SELENIUM COMPOUNDS		B	B	B	B	B	B	B	B	B			

[a]For each HAP emission point defined in the process flow diagram, write in the applicable letter code defined below:

A - Specific HAP is known to be emitted.
B - Specific HAP is known not to be emitted.
C - No reason or data to assume that this HAP is emitted.
D - HAP is believed to be emitted, but no data exists.

All blank cells assumed to be "C's."

Table 3–A. Information on Hazardous Air Pollutants –– Preair Pollution Control Device Streams

1	2	3	4	5	6	7	8	9	10
Unit Operation	Type of Equipment/ Emission Points	Name of HAP	Capture system/device	Capture Efficiency, percent	Basis for reported efficiency	HAP Concentrations in particulate matter, wt %	Total particulate loading, tons/yr	Flow rate of captured stream, acfm	Uncontrolled HAP emissions, tons/yr
Raw materials unloading	E1	POM (1)	None			No data exists	1.9		
Raw materials storage	E2	POM	None			No data exists	1.9		
Raw materials conveying/weighing	E3	POM	None			No data exists	1.9		
Furnace fume fugitive	F1	Sb compounds	None			0.0002	882		0.001764
		As compounds				0.0012			0.010584
		Cd compounds				0.0002			0.001764
		Cr compounds				0.002			0.01764
		Co compounds				0.0000006			0.000005292
		CN compounds				0.0000009			0.000007938
		Pb compounds				0.02			0.1764
		Hg compounds				0.00001			0.0000882
		Ni compounds				0.001			0.00882
		Se compounds				0.000003			0.00002646
Furnace fume	CS1	Sb compounds	None			0.0002	8662.2		0.0173244
		As compounds				0.0012			0.1039464
		Cd compounds				0.0002			0.0173244
		Cr compounds				0.002			0.173244
		Co compounds				0.0000006			0.0000519732
		CN compounds				0.0000009			0.0000779598
		Pb compounds				0.02			1.73244
		Hg compounds				0.00001			0.00086622
		Ni compounds				0.001			0.086622
		Se compounds				0.000003			0.000259866
Onsite solid waste disposal –C	E5	Cr compounds	None			0.01	2.6		0.00026
		Ni compounds				0.002			0.000052
Tapping (Furnace 1)	F2	Cr compounds	Hood			0.002	5.76		0.0001152
		Co compounds				0.002			0.0001152
		Mn compounds				0.004			0.0002304
		Ni compounds				0.0045			0.0002592

Table 3–A. Information on Hazardous Air Pollutants –– Preair Pollution Control Device Streams

1	2	3	4	5	6	7	8	9	10
Unit Operation	Type of Equipment/ Emission Points	Name of HAP	Capture system/device	Capture Efficiency, percent	Basis for reported efficiency	HAP Concentrations in particulate matter, wt %	Total particulate loading, tons/yr	Flow rate of captured stream, acfm	Uncontrolled HAP emissions, tons/yr
Tapping (Furnaces 2,3)	E4	Cr compounds	None			0.002	86.8		0.001736
		Co compounds				0.002			0.001736
		Mn compounds				0.004			0.003472
		Ni compounds				0.0045			0.003906
Tapping (Furnace 1)	CS2	Cr compounds	None			0.002	52.3		0.001046
		Co compounds				0.002			0.001046
		Mn compounds				0.004			0.002092
		Ni compounds				0.0045			0.0023535
Fume storage & classify	E7	Sb compounds	None			0.0002	7.75		0.0000155
		As compounds				0.0012			0.000093
		Cd compounds				0.0002			0.0000155
		Cr compounds				0.002			0.000155
		Co compounds				0.0000006			0.0000000465
		CN compounds				0.0000009			0.0000000698
		Pb compounds				0.02			0.00155
		Hg compounds				0.00001			0.000000775
		Ni compounds				0.001			0.0000775
		Se compounds				0.000003			0.0000002325
Fume storage	E8	Sb compounds	None			0.0002	7.15		0.0000143
		As compounds				0.0012			0.0000858
		Cd compounds				0.0002			0.0000143
		Cr compounds				0.002			0.000143
		Co compounds				0.0000006			0.0000000429
		CN compounds				0.0000009			0.0000000644
		Pb compounds				0.02			0.00143
		Hg compounds				0.00001			0.000000715
		Ni compounds				0.001			0.0000715
		Se compounds				0.000003			0.0000002145
Fume bagging	E9	Sb compounds	None			0.0002	17.29		0.00003458
		As compounds				0.0012			0.00020748
		Cd compounds				0.0002			0.00003458
		Cr compounds				0.002			0.0003458
		Co compounds				0.0000006			0.0000001037
		CN compounds				0.0000009			0.0000001556
		Pb compounds				0.02			0.003458
		Hg compounds				0.00001			0.000001729
		Ni compounds				0.001			0.0001729
		Se compounds				0.000003			0.0000005187

Table 3–A. Information on Hazardous Air Pollutants –– Preair Pollution Control Device Streams

1	2	3	4	5	6	7	8	9	10
Unit Operation	Type of Equipment/ Emission Points	Name of HAP	Capture system/device	Capture Efficiency, percent	Basis for reported efficiency	HAP Concentrations in particulate matter, wt %	Total particulate loading, tons/yr	Flow rate of captured stream, acfm	Uncontrolled HAP emissions, tons/yr
Classifier cyclone excess air	CS3	Sb compounds	Hood			0.0002	150		0.0003
		As compounds				0.0012			0.0018
		Cd compounds				0.0002			0.0003
		Cr compounds				0.002			0.003
		Co compounds				0.0000006			0.0000009
		CN compounds				0.0000009			0.00000135
		Pb compounds				0.02			0.03
		Hg compounds				0.00001			0.000015
		Ni compounds				0.001			0.0015
		Se compounds				0.000003			0.0000045
Fume settling ponds	E11	Sb compounds	None			0.0002	0		
		As compounds				0.0012			
		Cd compounds				0.0002			
		Cr compounds				0.002			
		Co compounds				0.0000006			
		CN compounds				0.0000009			
		Pb compounds				0.02			
		Hg compounds				0.00001			
		Ni compounds				0.001			
		Se compounds				0.000003			
Onsite solid waste disposal –W	E12	Sb compounds	None			0.0002	2.6		0.0000052
		As compounds				0.0012			0.0000312
		Cd compounds				0.0002			0.0000052
		Cr compounds				0.002			0.000052
		Co compounds				0.0000006			0.0000000156
		CN compounds				0.0000009			0.0000000234
		Pb compounds				0.02			0.00052
		Hg compounds				0.00001			0.00000026
		Ni compounds				0.001			0.000026
		Se compounds				0.000003			0.000000078
Si product cooling	E13						0		
Si product crushing	F3	Cr compounds	Hood			0.002	1.46		0.0000292
		Co compounds				0.002			0.0000292
		Mn compounds				0.004			0.0000584
		Ni compounds				0.0045			0.0000657

Table 3–A. Information on Hazardous Air Pollutants –– Preair Pollution Control Device Streams

1	2	3	4	5	6	7	8	9	10
Unit Operation	Type of Equipment/ Emission Points	Name of HAP	Capture system/device	Capture Efficiency, percent	Basis for reported efficiency	HAP Concentrations in particulate matter, wt %	Total particulate loading, tons/yr	Flow rate of captured stream, acfm	Uncontrolled HAP emissions, tons/yr
Si product crushing	CS4	Cr compounds Co compounds Mn compounds Ni compounds	Baghouse			0.002 0.002 0.004 0.0045	13.1		0.000262 0.000262 0.000524 0.0005895
Si product screening	F4	Cr compounds Co compounds Mn compounds Ni compounds	Hood			0.002 0.002 0.004 0.0045	2.91		0.0000582 0.0000582 0.0001164 0.00013095
Si product screening	CS5	Cr compounds Co compounds Mn compounds Ni compounds	Baghouse			0.002 0.002 0.004 0.0045	26.2		0.000524 0.000524 0.001048 0.001179
Si product storage & loading	E16	Cr compounds Co compounds Mn compounds Ni compounds	None			0.002 0.002 0.004 0.0045	0.66		0.0000132 0.0000132 0.0000264 0.0000297
Dross crushing	F5	None	Hood			No data exists	0.16		
Dross crushing	CS6	None	Baghouse			No data exists	1.4		
Dross loading	E17	None	None			No data exists	0.07		

(1) POM = Polycyclic organic matter

Table 3–B. Information on Hazardous Air Pollutants––Controlled Streams

1	2	3	4	5	6	7	8	9	10
Unit Operation	Type of Equipment/ Emission Points	Name of HAP	Capture system/device	Capture Efficiency, percent	Basis for reported efficiency	HAP Concentrations in particulate matter, wt %	Total particulate loading, tons/yr	Flow rate of captured stream, acfm	Uncontrolled HAP emissions, tons/yr
Fume baghouses	E6	Sb compounds	Baghouse	98.5%	estimate	0.0002	125.4		0.0002508
		As compounds				0.0012			0.0015048
		Cd compounds				0.0002			0.0002508
		Cr compounds				0.002			0.002508
		Co compounds				0.0000006			0.0000007524
		CN compounds				0.0000009			0.0000011286
		Pb compounds				0.02			0.02508
		Hg compounds				0.00001			0.00001254
		Ni compounds				0.001			0.001254
		Se compounds				0.000003			0.000003762
Fume baghouses	BC1	Sb compounds	Baghouse	98.5%	estimate	0.0002	8236.8		0.0164736
		As compounds				0.0012			0.0988416
		Cd compounds				0.0002			0.0164736
		Cr compounds				0.002			0.164736
		Co compounds				0.0000006			0.0000494208
		CN compounds				0.0000009			0.0000741312
		Pb compounds				0.02			1.64736
		Hg compounds				0.00001			0.00082368
		Ni compounds				0.001			0.082368
		Se compounds				0.000003			0.000247104
Classifier cyclone	E10	Sb compounds	Baghouse	99.0%	estimate	0.0002	1.5		0.000003
		As compounds				0.0012			0.000018
		Cd compounds				0.0002			0.000003
		Cr compounds				0.002			0.00003
		Co compounds				0.0000006			0.000000009
		CN compounds				0.0000009			0.0000000135
		Pb compounds				0.02			0.0003
		Hg compounds				0.00001			0.00000015
		Ni compounds				0.001			0.000015
		Se compounds				0.000003			0.000000045

Table 3–B. Information on Hazardous Air Pollutants--Controlled Streams

1	2	3	4	5	6	7	8	9	10
Unit Operation	Type of Equipment/ Emission Points	Name of HAP	Capture system/device	Capture Efficiency, percent	Basis for reported efficiency	HAP Concentrations in particulate matter, wt %	Total particulate loading, tons/yr	Flow rate of captured stream, acfm	Uncontrolled HAP emissions, tons/yr
Excess air baghouse	BC2	Sb compounds	Baghouse	99.0%	estimate	0.0002	148.5		0.000297
		As compounds				0.0012			0.001782
		Cd compounds				0.0002			0.000297
		Cr compounds				0.002			0.00297
		Co compounds				0.0000006			0.000000891
		CN compounds				0.0000009			0.0000013365
		Pb compounds				0.02			0.0297
		Hg compounds				0.00001			0.00001485
		Ni compounds				0.001			0.001485
		Se compounds				0.000003			0.000004455
Si/Dross product crushing	E14	Cr compounds	Baghouse	99.5%	estimate	0.002	0.07		0.0000014
		Co compounds				0.002			0.0000014
		Mn compounds				0.004			0.0000028
		Ni compounds				0.0045			0.00000315
Si/Dross product crushing	BC3	Cr compounds	Baghouse	99.5%	estimate	0.002	13.03		0.0002606
		Co compounds				0.002			0.0002606
		Mn compounds				0.004			0.0005212
		Ni compounds				0.0045			0.00058635
Si product screening	E15	Cr compounds	Baghouse	99.5%	estimate	0.002	0.13		0.0000026
		Co compounds				0.002			0.0000026
		Mn compounds				0.004			0.0000052
		Ni compounds				0.0045			0.00000585
Si product screening	BC4	Cr compounds	Baghouse	99.5%	estimate	0.002	26.07		0.0005214
		Co compounds				0.002			0.0005214
		Mn compounds				0.004			0.0010428
		Ni compounds				0.0045			0.00117315

Table 4. Air Pollution Capture System and Control Euipment Parameters

Capture systems	Emission Point F1	Emission Point F2	Emission Point F3	Emission Point F4	Emission Point F5
Unit ventilation system used: Control device fan Other (specify)	Control device fan	Furnace #1 has fan feeding into CS1 dust collection. Furnaces #2&3 tapping emissions are not abated @ E4	Pulse jet collector "Clean Air" suction	Pulse jet collector "Clean Air" suction	Pulse jet collector "Clean Air" suction
Furnace Design: Open Semi – or mixed– sealed Sealed	3 furnaces, 3 center line submerged arc, owner designed	N/A	N/A	N/A	N/A
Enclosure or Hood Design: Complete enclosure Closed hood Canopy or suspended hood Other (describe)	Front opening hood, "dog house" design	N/A	Suction vents at crusher hopper	Suction vents and hoods at various places	Suction vents and hoods at various places
Airflow Control system: Drop curtain baffling Curtain or baffling material Other (describe)	Suction fan runs at capacity with control at D.P. across house or by max. motor current	N/A	None – fans run @ capacity	None – fans run @ capacity	None – fans run @ capacity
Distance between hood and emission source Description of hood (general shape and size relative to emission source)	4' between shell & hood	N/A	N/A	N/A	N/A
Building ventilation: Open roof monitor – natural ventilation, other	To atmosphere by roof monitor	To atmosphere by roof monitor	To atmosphere by roof monitor	To atmosphere, no roof monitor	To atmosphere, no roof monitor

Table 4. Air Pollution Capture System and Control Euipment Parameters

Control Device: Baghouse	Emission Point E6 Wheelbrator	ICA	Emission Point E10	Emission Point E14	Emission Point E15
Gas inlet temperature, F	450° F	450° F	near ambient	near ambient	near ambient
Bag material, weight, and coating	Fiberglass	Fiberglass	Dacron	Dacron	Dacron
Cleaning method & frequency	Reverse air on fixed time	Reverse air on fixed time	Pulse air	Pulse air	Pulse air
Air to cloth ratio, acfm/ft²	1.77 to 1	1.55 to 1	5.14 to 1	6.27 to 1	5.14 to 1
Pressure drop across baghouse	7" H_2O	12" H_2O	4" H_2O	4" H_2O	4" H_2O
Stack opacity, percent	N/A	N/A	N/A	N/A	N/A
Controlled particulate emissions, gr/dscf	N/A	N/A	N/A	N/A	N/A

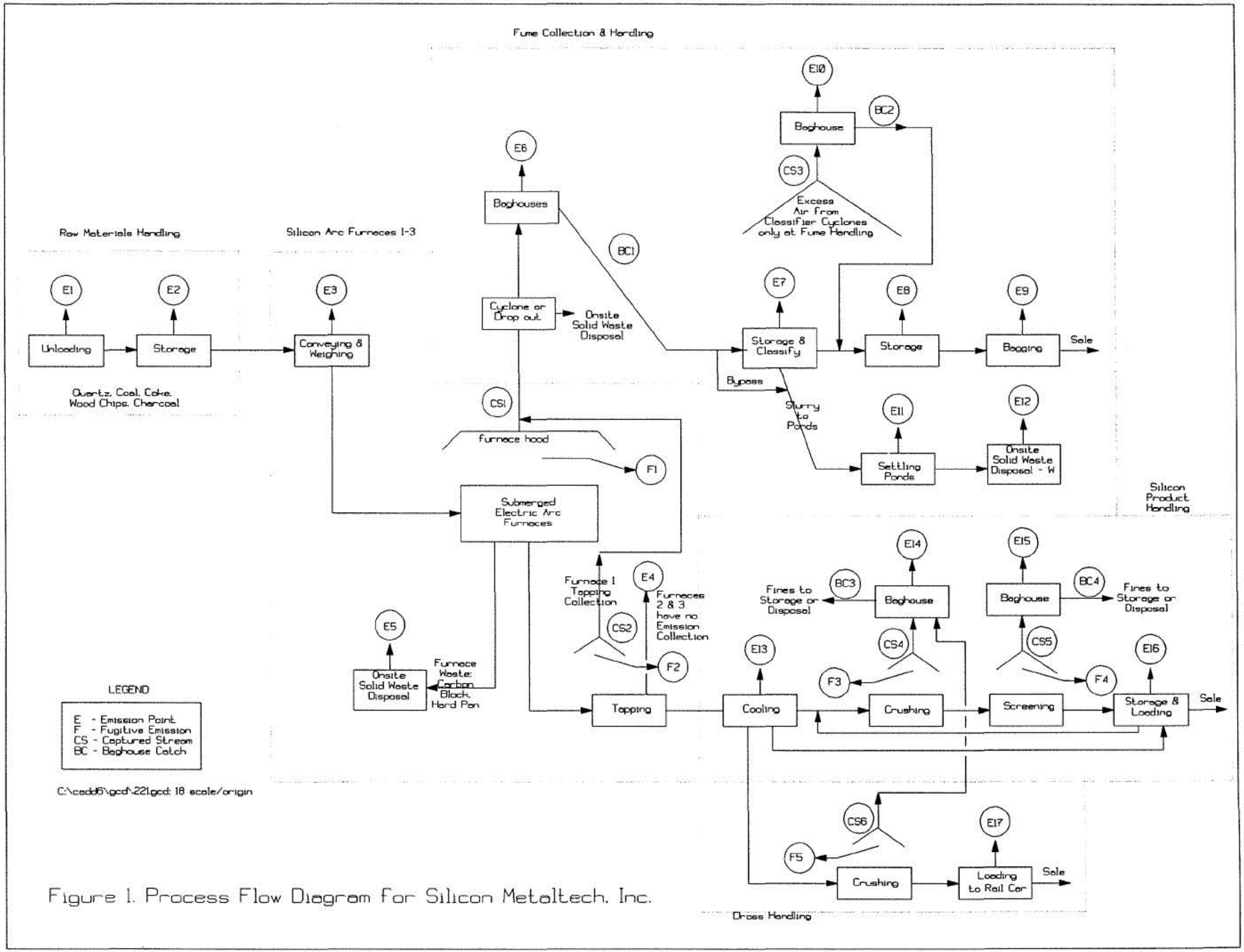

Figure 1. Process Flow Diagram for Silicon Metaltech, Inc.

PROCESS FLOW CALCULATIONS FOR SILICON METALTECH, INC.

Nomenclature and legend for all Unit Operations

Emission Point

E1	Raw materials unloading
E2	Raw materials storage
E3	Raw materials conveying/weighing
E4	Tapping (Furnaces 2, 3)
E5	On-site waste disposal
E6	Fume baghouses
E7	Fume storage and classify
E8	Fume storage
E9	Fume bagging
E10	Classifier cyclone
E11	Fume settling pond
E12	Onsite solid waste disposal
E13	Si product cooling
E14	Si/Dross product crushing
E15	Si product screening
E16	Si product storage and loading
E17	Dross loading

Fugitive Emissions

F1	Furnace fume
F2	Tapping (Furnace 1)
F3	Si product crushing
F4	Si product screening
F5	Dross crushing

Captured Stream

CS1	Furnace fume
CS2	Tapping (Furnace 1)
CS3	Classifier cyclone excess air
CS4	Si product crushing
CS5	Si product screening
CS6	Dross crushing

Baghouse Catch

BC1 Fume baghouses
BC2 Excess air baghouse
BC3 Si/Dross product crushing
BC4 Si product screening

Fume Collection and Handling

E6 + F1 + E4 + F2 = 1100 tons per year (t/y)

Assumptions:
E11 = 0
CS1 includes CS2

Silicon Product Handling

CS4 = 0.1%(13,076) = 13.1 t/y

E14 = 0.5%(CS4) + 0.5%(CS6) = 0.07 t/y

BC3 = CS4 + CS6 -E14 = 13.1 + 1.4 - 0.07 = 14.43 t/y

CS5 = 0.2%(13076) = 26.2 t/y

E15 = 0.5%(CS5) = 0.5% (26.2) = 0.13 t/y

Therefore BC4 = CS5 - E15 = 26.2 - 0.13 = 26.07 t/y

Assumption:
E13 = 0

Product hoods

Assume 90% effiency as a standard for product hoods

F3/1 = CS4/9

F3 = CS4(1/9) = 13.1(1/9) = 1.46 t/y

F4/1 = CS5/9

F4 = CS5(1/9) = 26.2(1/9) = 2.91 t/y

Crushing - Dross = by product

CS6 = 0.1%(Dross) = 0.1%(1364) = 1.4 t/y

F5/1 = CS6/9

F5 = 1.4(1/9) = 0.16 t/y

Storage Pile Emissions

Use Washington DOE formula for calculation of storage pile emissions
Inventory of quartz = 17,957 tons average
quartz usage = 38,408 t/y average

Inventory of coal = 1252 tons average
coal usage = 14934 t/y average

Assume ratio of usage/inventory = 3/1

$Mass = M(0.044n + 0.11)(S/1.5)(100/PE)^2$

M = storage mass (tons)
n = storage activity, days per week)
S = assumed to be 1
PE = precip/evap index (96 for SMI site)

Average inventory Si product = 13076/3 = 4359 tons
Average inventory dross = 1364/3 = 455 tons

E16 Si product = $4359[0.044(7) + 0.11](1.0/1.5)(100/96)^2$

E16 = 1324 pounds per year or 1324/2000 = 0.66 t/y

E17 Dross = 455[0.044(7) + 0.11](1.0/1.5)(100/96)2

E17 = 138 pounds per year or 138/2000 = 0.07 t/y

Losses to ground

Fume to sell = 3357 t/y

Loss to ground, bagging operation = 100 t/y

Loss to ground, storage = 100 t/y

Loss to ground, storage and classify = 150 t/y

Total loss to ground = 350 t/y

Baghouse & classifier cyclones

CS3 is assumed to be 150 t/y
Efficiency on that baghouse = 99%

Therefore E10 = 1.0%(150) = 1.5 t/y

BC2 = CS3 - E10 = 150 - 1.5 = 148.5 t/y

Storage, Storage & Classify, Bagging

Bagging:

E9 (lose 0.5%) Into bagging = 3357 + 100 = 3457

E9 = (0.5)(3457) = 17.29 t/y

Storage:

E8 (lose 0.2%)

Into storage = 3357 + 100 + 17.29 + 100 = 3574.29 t/y

E8 = 0.2%(3574.29) = 7.15 t/y

Storage and Classify

Into storage and classify = 3574.29 + 148.5 + 150

= 3872.79 t/y

E7 = 0.2%(3872.7) = 7.75 t/y

BC1 = 3872.79 + 4364 = 8236.79 t/y

E6/1.5 = 8236.79/98.5

E6 = 8236.79(1.5)/98.5 = 125.4 t/y

Assume cyclone/drop out = 200 t/y

CS1 = 8362.22 + 200 = 8562.22 t/y

Tapping Emissions

Tappings emissions = CS2 + F2 + E4

Assume 0.4% loss; they relate to total production

Total exiting tapping = E13 + F3 + CS4 + CS5 + F4 + E16
+ Si product + Dross product + E17 + CS6 + F5

Total exiting tapping = 0 + 1.46 + 13.1 + 26.2 + 2.91 +

0.66 + 13076 + 1364 + 0.07 + 1.4 + 0.16 = 14,486 t/y

Assume CS2 + F2 + E4 = 1% of total exiting tapping

CS2 + F2 + E4 = 1%(14486) = 144.86 t/y

Furnace operation

Furnace operating hours:

#1 = 305 days
#2 + #3 = 456 days

E4/(CS2 + F2) = 456/305 = 1.495

E4 + (CS2 + F2) = 144.86 t/y

CS2/9 = F2/1 90% efficiency

Solving these three equations gives:

E4 = 86.8 t/y
CS2 = 52.3 t/y
F2 = 5.76 t/y

Furnace Hood

E6 + F1 + E4 + F2 = 1100 t/y

125.4 + F1 + 86.8 + 5.8 = 1100

F1 = 1100 - 86.8 - 5.8 - 125.4 = 882 t/y

Raw materials handling

Assume E1 = E2 = E3

E1 + E2 + E3 = 4.7 + 1.1 t/y

E1 = E2 = E3 = 1.9 t/y

On-Site Solid Waste Disposal

At each of two on-site solid waste disposal areas, calculated emissions form one of these areas for the 1991 emission inventory was 2.6 t/y, based on WDOE formula. This emission rate was used for this questionnaire, i.e., E5 = E12 = 2.6 t/y.

1991 Emission Inventory

C:\reports\229r.wr1

Environmental
Engineering &
Consulting, Inc.

July 29, 1992

Ms. Rose Longoria
Air Quality Technician
Washington Department of Ecology
Central Regional Office
106 South 6th Avenue
Yakima, Washington 98902-3387

Dear Ms. Longoria:

At the request of your Office, attached is the Silicon Metaltech, Inc. (SMI) air emission inventory for 1991.

The inventory is summarized in Table 1, SMI EMISSION INVENTORY, Summary of calculated emissions, tons/year. On the pages following Table 1 are emission estimates for various individual sources and types of emissions, as follows:

Silicon Material Balance for Emission Calculations

SOx Emission Calculations

Fugitive Emissions from Plant Roads

Calculation of NOx, VOC & Lead Emissions from EPA SCC reference

Fugitive Emissions from Raw Material Piles

Fugitive Emissions from Raw Material & Product Handling

Emissions from Product Crushing/Handling Dust Collector Bag Houses

Fugitive Emissions from Onsite Solid Waste Disposal

Calculations were based on either material balances, on EPA calculation methods (e.g., CONTROL OF OPEN FUGITIVE DUST SOURCES, EPA-450/3-88-008, EPA AP-42 and the EPA SCC reference listing of emission factors) or upon WDOE fugitive emission data sheets. Each type of emission calculation used is documented in the attachments.

19125 Northcreek Parkway, Suite 111 Bothell, WA 98011-8002 206.485.3437 FAX 206.483.1058

Note that we found some difficulty in using some of the EPA methods and emission factors. For example, The emission factor for SOx from the EPA SCC listing of emission factors was incorrect (too low), since SOx emissions would depend primarily on sulfur in raw materials. We had plant data from which a material balance could be calculated to estimate SOx emissions. The factor for VOC listed in EPA SCC listing of emission factors appeared too high, so the factor for ferrosilicon was used.

Also note that the emission estimate submitted last year was not reflected in the blank form you sent to Mr. Trunzo at SMI, so that form was not filled out.

It is understood you will send a copy of the regulations dealing with toxic air pollutants so that emissions estimates of those pollutants, if any, can be made.

Please do not hesitate to call me if there are any questions.

Sincerely,

Patrick H. Wicks, PE, CHMM
President

Enclosures

cc: Mr. Jim Trunzo, SMI, via Fax to 509-884-3263

Environmental
Engineering &
Consulting, Inc.

Silicon Metaltech, Inc.

AIR EMISSION INVENTORY
for
1991

July 29, 1992

Patrick H. Wicks, PE, CHMM
President

Prepared for:
Silicon Metaltech, Inc.
ROCK ISLAND, WASHINGTON

Prepared by:
Environmental Engineering & Consulting, Inc.
19125 Northcreek Parkway, Suite 111
Bothell, Washington 98011-8002
(206) 485-3437
Fax (206) 483-1058

Table 1. SMI EMISSION INVENTORY

Summary of Calculated Emissions, tons in 1991

Sources:	PARTI-CULATES	PM10	SOx	NOx	VOC	CO	Lead	Estimation Method
PROCESS/NONFUGITIVE EMISSIONS								
a. Furnace 1/wb bag house; Furnace 2/ca bag house; Furnace 3/ca bag house; Furnace building roof monitor; other Furnace building uncaptured emissions	1,100.3	946.3 (1)	597.6	0.7	29.4	none	0.02	0, 2, 3
b. Product crusher dust collector	0.1	0.1 (2)						4
c. Product screening dust collector	0.1	0.1 (2)						4
d. Fume bagging dust collector	0.3	0.3 (2)						4
FUGITIVE EMISSIONS								
a. Vehicles on Plant Roads		16.2						3
b. Raw Material Piles	4.7	2.4 (3)						3
c. Raw Material & Product Handling (Loading onto & from piles)	1.1	0.4 (4)						3
d. Solid Waste Disposal	2.6							5
e. Fume Ponds	0.0							0
f. Si crushing/handling losses	9.0	0.5 (5)						4
Subtotal Emissions	1,118.3	965.6	597.6	0.7	29.4	0.0	0.0	
TOTAL EMISSIONS, not including Lead	1,745.9							

(1) PM10 is 86% of total particulates according to AP42, Table 7.4-4
(2) PM10 is 87% of total particulates according to AP42, Table 7.4-4
(3) PM10 is 50% of total particulates according to AP42, Table in section 11.2.7.3
(4) PM10 is 35% of total particulates according to AP42, Table in section 11.2.3-2
(5) PM10 is 6% of total particulates according to AP42, Table 8.19.2-1

Silicon Material Balance
for
Emission Calculations
1991

	Total, tons	Concen-tration of Si, %	Concen-tration of SiO2, %	Ratio, Si/SiO2	Total as 100% SiO2, tons	Total as 100% Si, tons	
INCOMING							
Quartz	38,407		99.8%	0.4674	38,330	17,916	Total In
OUTGOING							
Si Metal	13,076	98.9%				12,932	
Dross	1,364	68%				928	
Si crushing/handling losses:							
To inventory (recovered)	170	98.9%				168	
To ground & air (3)	30	98.9%				30	
Fume to Sale	3,357		90%	0.4674		1,412	
Fume Loss to Ground	350		90%	0.4674		147	
Fume to Ponds	4,364		90%	0.4674		1,836	
						17,453	
		Total Out Except Uncaptured Emissions					
Uncaptured Emissions (1)	1,100		90%	0.4674		463	
						17,916	Total Out

Notes:
(1) uncaptured emissions including roof monitor emissions, other furnace building uncaptured emissions and baghouse losses.
(2) Weight ratio of Si to SiO2 is 0.4674: @ROUND(28.086/(28.086+2*15.9994),4)
(3) Estimated 9 tons/yr fugitive dust emitted of this amount.

Calculation of NOx, VOC & Lead Emissions from EPA SCC reference 1991

NOx emissions:

NOx emission calculated from SCC factor of 0.1 lb NOx/ton Si:

0.6538 tons/y

VOC emissions:

VOC emission calculated from SCC factor of 4.5 lb VOC/ton for FeSi operations:

29.421 tons/y

VOC emission factor listed in EPA SCC reference of 72 lb VOC/ton Si is believed to be not applicable; use of that factor would have resulted in calculated emissions of 471 t/y.

Lead emissions:

Lead emissions calculated from SCC factor of 0.0031 lb lead/ton Si:

0.020267 tons/y

Note this emission is already included in particulate emissions above, so is not an additional emission.

FUGITIVE EMISSIONS
from
Plant Roads
1991

	Average Speed, mph	Weight, lb	Number of Wheels	Travel, miles	Type Surface	Calculated PM10 (1B) Emission Factor, lb/VMT	alculated PM10 missions, t/y
Product Trucks–Outbound	8	80,000	18	305	unpaved	4.62	0.71
Product Trucks–Inbound	8	30,000	18	305	unpaved	2.33	0.36
Inbound Trucks	8	10,300	6	484	paved	3.41	0.83
Wood Chip Trucks–Inbound	8	60,000	10	377	unpaved	2.82	0.53
Wood Chip Trucks–Outbound	8	27,000	10	377	unpaved	1.61	0.30
920 Loader	5	22,000	4	1,391	paved	3.41	2.37
Fork Lifts	5	12,000	4	4,130	paved	3.41	7.05
980 Loader	5	89,000	4	4,704	unpaved	1.47	3.45
Dump Truck	8	10,400	6	78	paved	3.41	0.13
Dump Truck	8	10,400	6	78	unpaved	0.64	0.03
Boom Truck	5	17,860	6	157	paved	3.41	0.27
Maintenance utility vehicle	5	4,920	4	78	paved	3.41	0.13
						Total	16.15

(1B) Formula 2–3, with surface silt loading of 50 g/sq.m for paved roads or Formula 3–1, with silt loading of 10% for unpaved roads, from CONTROL OF OPEN FUGITIVE DUST SOURCES, EPA–450/3–88–008; miles traveled reduced to 86% of 1990 amount to reflect same reduction in production and throughput.
Weather data for 1990 indicate 87 days with at least .01″ precipitation; 87 raindays
mean wind speed about 12 mph; based on personal communication with National Weathers Service, Wenatchee.

FUGITIVE EMISSIONS
from
Raw Material Piles
1991

	Tons Avg. Inventory	% Silt Content	Calculated Fugitive missions, lb/yr (1)	
Quartz	17,957	1.5	8,145	
Coke	397	1.5	180	
Coal	1,252	1.5	568	
Wood Chips	1,295	1.5	587	

	Total Fugitive Emissions:		9,480	lb/yr
			4.7	tons/yr

(1) Storage pile fugitive emissions per WDOE calculation method

SOx Emission Calculations
1991

	Sulfur Content, %	Raw Mat'l & Products, tons	Contained Sulfur, tons	as SO2 (1), tons
SULFUR IN				
Coke	5.5%	3,989	219.4	
Coal	0.6%	14,934	89.6	

		Total	309.0	
SULFUR OUT				
Fume	0.10%	9,171	9.2	
Si & Dross	0.005%	14,440	0.7	
SOx emissions			299.1	597.6

		Total	309.0	

EPA SCC reference listed SOx emission factor of 0.07 lb SOx/ton Si. Using this value, 0.6 tons/y SOx emission would be calculated. This is highly questionable when compared to mass balance above; accordingly the value resulting from the mass balance is used.

(1) Sulfur converted to SO2 via ratio of molecular weights: (32.064+2*15.9994)/32.064

EMISSIONS
from
Product Crushing/Handling
Dust Collector Bag Houses
1991

	Product Throughput t/y	% of Product Becoming Entrained Into Bag House Inlet	Capture Efficiency	Emission, t/y
Product Crushing	13,076	0.1%	99.5%	0.07
Product Screening	13,076	0.2%	99.5%	0.13
Fume Bagging	3,357	1.0%	99.0%	0.34
			Total	0.53

FUGITIVE EMISSIONS
from
Onsite Solid Waste Disposal
1991

Fugitive emissions from onsite solid waste disposal, based on WDOE calculation method, for one acre:

2.6 tons/y

FUGITIVE EMISSIONS
from
Raw Material & Product Handling
1991

	Throughput, tons	Emission formula variables k	U, mph	M, %	Emission Factor (1A) lb/ton	Calculated Emission, t/y
Raw Materials Handling						
Quartz	38,407	0.35	12	1	0.00922	0.177
Coke	3,989	0.35	12	6	0.00075	0.001
Coal	14,934	0.35	12	7	0.00061	0.005
Wood Chips	21,948	0.35	12	10	0.00037	0.004
Product Handling						
Si Metal	13,076	0.35	12	0.5	0.02434	0.159
dross	1,364	0.35	12	0.5	0.02434	0.017
					Subtotal	0.36
					Number of times each handled	3
					Total	1.1

(1A) Formula 4-1 from CONTROL OF OPEN FUGITIVE DUST SOURCES, EPA-450/3-88-008 Note: Estimated emissions from conveyors using WDOE transfer, conveying formula was less than 0.1 ton/yr; accordingly the above estimates should adequately include fugitive emissions from conveyors.

WDOE Air Toxics regulations (WAC 173–460, Controls for New Sources of Toxic Air Pollutants) and Controlling Toxic Air Pollution pamphlet

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WASHINGTON STATE DEPARTMENT OF ECOLOGY

Focus

Controlling Toxic Air Pollution

Overview

The Department of Ecology adopted a statewide rule (Controls for New Sources of Toxic Air Pollution, WAC 173-460) in June 1991, to control air pollution from more than 500 toxic or cancer-causing chemicals. The regulation represents more than two years of research, planning and consultation with scientific, business and environmental experts. The purpose of the rule is to protect the public from exposure to unhealthful levels of toxic and cancer-causing emissions from new or modified commercial and industrial operations.

Traditionally, the regulation of air pollution has focused on six pollutants—carbon monoxide, particulate, sulfur dioxide, lead, ozone and nitrogen oxides—for which the federal government has set outdoor exposure standards designed to protect public health and the environment. These are known as criteria pollutants. But there are hundreds of additional substances emitted into the atmosphere that threaten public health, too. They have been virtually unregulated in the United States.

The regulation of these non-criteria pollutants signals a new era in air pollution control, much like when the regulation of the criteria pollutants began 20 years ago. The 1990 federal clean air act amendments set a timeline for the creation—during the next several years—of national regulations governing 189 toxic air pollutants. With Ecology's air toxics rule effective September 18, 1991, Washington benefits from controls on these pollutants years ahead of most other states.

Assessing the problem

Washington's Environment 2010 study examined 24 of these non-criteria pollutants. The report estimated at least 2.5 million Washington residents are at risk of suffering the effects of these substances. Pound for pound, many of these toxic and cancer-causing emissions pose a more potent public health threat than the criteria pollutants.

Air pollution from these 24 substances was estimated at 121,000 tons per year, which the report noted represents only a fraction of Washington's total toxic air emissions. While much attention has focused on toxic ground and water pollution, the U.S. Environmental Protection Agency's annual Toxic Release Inventory—based on reports from 343 Washington companies—shows emissions into the air account for 57% of all reported toxic releases, discharges and transfers. The Inventory covers only a small percentage of the state's sources of toxic air pollution.

Pollutants regulated by Ecology's rule include:

- **Toluene**, a common component of printing inks, paints and solvents. It can affect the nervous system. It is emitted into the outside air from such businesses as greeting card and plastic bread wrapper printing facilities, painting and coating operations. Switching to water based inks and paints avoids the use and air emission of this solvent.

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FA-91-123

printed on recycled paper

- **Trichloroethylene**, a solvent commonly used to clean and degrease metal aircraft and other mechanical parts. It is a probable carcinogen. Alternative non-toxic cleaning products and methods are available.
- **Perchloroethylene**, widely used as a cleaning agent by dry cleaners. It is a probable carcinogen. Emissions can be controlled by using a process to capture and reuse the solvent.
- **Hexavalent chromium**, emitted into the air by the chrome plating process used in making such goods as car bumpers, faucets and airplane parts. It is a known carcinogen. Control technology is available to limit pollution by this and other chromium compounds.

These toxic air pollutants come from the production of goods and services people buy and use every day.

Washington's new toxic air pollution rule

Ecology has set up a permitting process for new or modified sources of toxic air pollutants. The requirements affect such enterprises as dry cleaners, auto paint shops, pulp mills, aluminum plants, chemical manufacturers, solid waste incinerators, fiberglassing operations, printers and aircraft parts manufacturers.

This rule utilizes the same initial permitting process as is required for new sources of criteria pollutants. The toxic regulation applies to all new sources and to modifications of existing sources that increase emissions of any regulated pollutant. The Best Available Control Technology (BACT) is required for any new or increased toxic emission. BACT can include substitutions or process changes that prevent or reduce toxic emissions. When there is no new or increased toxic emission, the less stringent Reasonably Available Control Technology (RACT) is required for any toxic pollutant in a modified source that remains the same or is reduced.

Acceptable Source Impact Levels

For each of more than 500 chemicals, the rules define an acceptable increase in outdoor exposure to a toxic pollutant called an *Acceptable Source Impact Level*, or ASIL for short. These have been set conservatively to protect human health because there can be multiple sources of a particular toxic pollutant in a community. Here are the basic limits:

- The ASIL for each carcinogenic pollutant corresponds to a cancer risk of one additional case per million people, over a lifetime of constant exposure to the substance.
- The ASIL for the other toxic pollutants is set by dividing worker exposure limits by a safety factor of 300. Ecology used the American Council of Governmental Industrial Hygienists' Threshold Limit Values as the basis for its ASIL calculations.

Permitting Steps

The permitting process is divided into two basic tiers. It is expected that most applicants will need to pass only the first tier in order to receive a permit. Key first tier requirements include:

- Use of the Best Available Control Technology (BACT).
- Calculation of how much of the pollutant(s) would be emitted using that technology.
- Based on these projected emissions, and using approved air pollution dispersion models, an estimate of the resulting level of outdoor pollutants.

If these calculations show that the ambient level of a toxic air pollutant is less than or equal to the ASIL, the permit can be granted. If the calculations show that the ASIL would be exceeded, the applicant can proceed in either of two ways:

- Revise the proposed project so that it meets the first tier requirements.
- Pursue the second permitting tier, in which the applicant must demonstrate how public health will be protected. A health impact assessment is required. It must describe:
  - the pathway by which the pollutant would reach the public,
  - the number of people exposed, and
  - the pollutant's toxic effects.

In the case of carcinogenic emissions, the risk of an additional cancer case in the population must be no greater than one in 100,000 over 70 years.

A further permitting tier is available to sources of carcinogenic emissions that do not meet the one per 100,000 cancer risk requirement. Ecology will evaluate applicants at this level case by case. The process must produce an outcome that benefits the environment as a whole. Also, the applicant must discuss the project and risks with the affected community.

This permitting tier allows for innovation, with improvement to the overall environment as the general guiding principle. Many scenarios are possible. Some possibilities:

- A new source that would exceed the ASIL could address other toxic or carcinogenic sources in the community. This could include programs such as helping residents replace uncertified wood stoves, buying up older more polluting cars, and paying for programs such as car and van pools, which reduce vehicle emissions.
- An industry could change a manufacturing process to one that reduces the health risk to a community. For example, an old process exposes the community to a 70 year cancer risk of one in 100. The new process would reduce that risk to one in 10,000, a 100-fold improvement.
- A source could provide an overall environmental benefit in and of itself; a sewage treatment plant, for example.

Gasoline vapors

Ecology's rule to recover and contain gasoline vapors addresses this source of benzene, toluene and other toxics, making it unnecessary to include a redundant provision in the toxic air pollution rule for gasoline refueling. (For more information on the gasoline vapor control regulation, see the Ecology fact sheet *Focus: Gasoline Vapor Control.*)

Fluoride

Ecology adopted the nation's first regulation for a non-criteria pollutant—hydrogen fluoride, an aluminum mill by-product—in 1972. The rule requires the use of scrubbers or filters to remove the fluoride before it can be released into the air. The regulation sets standards for ambient air quality, and fluoride levels in nearby forage plants. The air toxics rule will not affect the fluoride regulation for aluminum mills.

King, Snohomish, Kitsap and Pierce counties

Regulation of toxic air pollutants is already in effect in these four counties, under a program adopted by the Puget Sound Air Pollution Control Agency (PSAPCA) in 1990. PSAPCA's rule is largely based on the ASIL exposure limits developed by Ecology. Ecology and PSAPCA have worked closely to coordinate their toxics regulations. PSAPCA's program is not altered by the state regulation.

Future actions

Ecology's air toxics rule presently addresses new sources and modified sources that increase toxic emissions. Ecology is preparing to begin development of rules for existing sources. (The PSAPCA air toxics regulation already addresses existing sources in King, Snohomish, Kitsap and Pierce counties.) Ecology will involve the business, environmental and scientific community in developing this rule. No timetable has been set, but the process could begin in late 1991. In addition, Ecology expects to update the air toxics regulation as needed to conform with federal air toxics rules scheduled for adoption over the next several years.

Permitting information

Most air quality permits, including air toxics permits, are granted by local air pollution control agencies. Projects permitted on or after September 18, 1991, come under the air toxics rule. The local agencies may adopt additional requirements. In counties with no local air pollution control agency Ecology issues all air quality permits.

For more information

For a copy of the air toxics rule (WAC 173-460) contact Judy Beitel, Department of Ecology, PV-11, Olympia, WA 98504-8711, (206) 459-6304, or your local air pollution control agency.

Questions concerning the rule may be addressed to your local air pollution control agency or to Ecology Program Development and Planning Supervisor, Dan Johnson, at the same address and phone listed above.

Air pollution control agencies

- **Puget Sound Air Pollution Control Agency** (King, Kitsap, Pierce, Snohomish counties): 200 W. Mercer St., Rm 205, Seattle, WA 98119-3958, (206) 296-7431.
- **Northwest Air Pollution Authority** (Island, Skagit, Whatcom counties): 302 Pine St., #207, Mt. Vernon, WA 98273, (206) 428-1617 (Mt. Vernon), 1-800-622-4627 (Island and Whatcom counties.)
- **Olympic Air Pollution Control Authority** (Clallam, Grays Harbor, Jefferson, Mason, Pacific, Thurston counties): 120 E State Ave., Olympia, WA 98501, (206) 586-0593, 1-800-422-5623.
- **Southwest Air Pollution Control Authority** (Clark, Cowlitz, Lewis, Skamania, Wahkiakum counties): 1308 NE 134th St, Ste. D, Vancouver, WA 98685-2747. (206) 574-3058, 1-800-633-0709.
- **Spokane County Air Pollution Control Authority:** W 1101 College Ave., Rm 230, Spokane, WA 99201, (509) 456-4727.
- **Yakima County Clean Air Authority:** County Courthouse, Yakima, WA 98901, (509) 575-4116.
- **Douglas County Air Pollution Control Commission:** 110 Third St., NE, East Wenatchee, WA 98802 (509) 884-1511.
- **Grant County Clean Air Authority:** PO Box 37, Ephrata, WA 98823-0337, (509) 754-2011.
- **Benton - Franklin - Walla Walla Counties Air Pollution Control Authority:** 650 George Washington Way, Richland, WA 99352, (509) 545-2354, (509) 946-4489.

Chapter 173-460 WAC

CONTROLS FOR NEW SOURCES OF TOXIC AIR POLLUTANTS

NEW SECTION

WAC 173-460-010 PURPOSE. (1) Pursuant to chapter 70.94 RCW, Washington Clean Air Act, the purpose of this chapter is to establish the systematic control of new sources emitting toxic air pollutants (TAPs) in order to prevent air pollution, reduce emissions to the extent reasonably possible, and maintain such levels of air quality as will protect human health and safety. Toxic air pollutants include carcinogens and noncarcinogens listed in WAC 173-460-150 and 173-460-160.

(2) This chapter establishes three major requirements:

(a) Best available control technology for toxics;

(b) Toxic air pollutant emission quantification;

(c) Human health and safety protection demonstration.

(3) Policy. It is the policy of ecology to reduce, avoid, or eliminate toxic air pollutants prior to their generation whenever economically and technically practicable.

NEW SECTION

WAC 173-460-020 DEFINITIONS. The definitions of terms contained in chapter 173-400 WAC are incorporated into this chapter by reference. In the event of a conflict between the definitions provided in chapter 173-400 WAC and the definitions provided in this section, the definitions in this section shall govern. Unless a different meaning is clearly required by context, the following words and phrases as used in this chapter shall have the following meanings. Note: For copies of the above mentioned rule and any other rule cited in this chapter, contact the Department of Ecology, Records Section, Mailstop PV-11, Olympia, WA 98504-8711.

(1) "Acceptable source impact analysis" means a procedure for demonstrating compliance with WAC 173-460-070 and 173-460-080, that compares maximum incremental ambient air impacts with applicable acceptable source impact levels (ASIL).

(2) "Acceptable source impact level (ASIL)" means a concentration of a toxic air pollutant in the outdoor atmosphere in any area which does not have restricted or controlled public access that is used to evaluate the air quality impacts of a single source. There are three types of acceptable source impact levels: Risk-based, threshold-based, and special. Concentrations for these three types of ASILs are determined as provided in WAC 173-460-110. ASILs are listed in WAC 173-460-150 and 173-460-160.

(3) "Authority" means an air pollution control authority activated pursuant to chapter 70.94 RCW that has jurisdiction over the subject source. Ecology is the authority if an air pollution control authority has not been activated or if ecology has jurisdiction over the source pursuant to RCW 70.94.395.

(4) "Best available control technology for toxics (T-BACT)" applies to each toxic air pollutant (TAP) discharged or mixture of TAPs, taking in account the potency quantity and toxicity of each toxic air pollutant or mixture of TAPs discharged in addition to the meaning given in WAC 173-400-030(10).

(5) "Carcinogenic potency factor" means the upper 95th percentile confidence limit of the slope of the dose-response curve and is expressed in units of (mg/kg-day)-1.

(6) "Class A toxic air pollutant (Class A TAP)" means a substance or group of substances listed in WAC 173-460-150.

(7) "Class B toxic air pollutant (Class B TAP)" means any substance that is not a simple asphyxiant or nuisance particulate and that is listed in WAC 173-460-160.

(8) "EPA's Dispersion Modeling Guidelines" means the United States Environmental Protection Agency Guideline on Air Quality Models, EPA 450/2-78-0277R and is hereby incorporated by reference.

(9) "EPA's Risk Assessment Guidelines" means the United States Environmental Protection Agency's Guidelines for Carcinogenic Risk Assessment, 51 FR 33992 (September 24, 1986) and is hereby incorporated by reference.

(10) "Increased cancer risk of one in one hundred thousand" means the 95th percent upper bound on the estimated risk of one additional cancer above the background cancer rate per one hundred thousand individuals continuously exposed to a Class A toxic air pollutant at a given average dose for a specified time.

(11) "Increased cancer risk of one in one million" means the 95th percent upper bound on the estimated risk of one additional cancer above the background cancer rate per one million individuals continually exposed to a Class A toxic air pollutant at a given average dose for a specified time.

(12) "Inhalation Reference Dose (Inhalation RfD)" means a reference dose published in the United States Environmental Protection Agency Integrated Risk Information System (IRIS).

(13) "Mixture" means a combination of two or more substances mixed in arbitrary proportions.

(14) "New toxic air pollutant source" means a source or emissions unit which may emit toxic air pollutants and which commenced construction after the effective date of this chapter. Addition to, enlargement, modification, replacement, or any alteration of any process or air pollutant source which may increase emissions or ambient air concentrations of any regulated air pollutant, including toxic air pollutants, shall be construed as construction or installation or establishment of a new toxic source.

(15) "Reasonably available control technology for toxics (T-RACT)" applies to each toxic air pollutant (TAP) discharged or mixture of TAPs, taking into account the potency, quantity, and toxicity of each toxic air pollutant or mixture of TAPs discharged in addition to the meaning given in WAC 173-400-030(59).

(16) "Second Tier Analysis" means an optional procedure used after T-BACT and acceptable source impact analysis for demonstrating compliance with WAC 173-460-070. The second tier analysis uses a health impact assessment as provided in WAC 173-460-090, instead of an acceptable source impact level.

(17) "Simple asphyxiant" means a physiologically inert gas or vapor that acts primarily by diluting atmospheric oxygen below the level required to maintain proper levels of oxygen in the blood. Examples of simple asphyxiants are given in Appendix X of the TLV Booklet referred to in subsection (19) of this section and incorporated by reference.

(18) "Threshold limit value-time weighted average (TLV-TWA)" means a concentration limit recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) for a normal eight-hour workday and forty-hour workweek.

(19) "TLV Booklet" means "TLVs, Threshold Limit Values and Biological Exposure Indices for 1987-88," published by the American Conference of Governmental Industrial Hygienists and is hereby incorporated by reference.

(20) "Toxic air pollutant (TAP)" means any Class A or Class B toxic air pollutant listed in WAC 173-460-150 and 173-460-160. The term toxic air pollutant may include particulate matter and volatile organic compounds if an individual substance or a group of substances within either of these classes is listed in WAC 173-460-150 and 173-460-160. The term toxic air pollutant does not include particulate matter and volatile organic compounds as generic classes of compounds.

(21) "Upper bound unit risk factor" means the 95 percent upper confidence limit of an estimate of the extra risk of cancer associated with a continuous 70 year exposure to 1 ug/m3 of a Class A toxic air pollutant.

NEW SECTION

WAC 173-460-030 REQUIREMENTS, APPLICABILITY AND EXEMPTIONS. (1) Applicability.

(a) The provisions of this chapter shall apply state-wide. The authority shall enforce WAC 173-460-010, 173-460-020, 173-460-030, 173-460-040, 173-460-050, 173-460-060, 173-460-070, 173-460-080, 173-460-130, 173-460-140, 173-460-150, and 173-460-160.

(b) Except as provided in this chapter, any new toxic air pollutant source listed in (b)(i), (ii), or (iii) of this subsection that may emit a Class A or Class B TAP into the ambient air is subject to these regulations:

(i) Standard industrial classifications:

(A) Major group 10-Metal mining.

(B) Major group 12-Bituminous coal and lignite mining.

(C) Major group 13-Oil and gas extraction.

(D) Manufacturing industries major groups 20-39.

(E) Major group 49-Electric, gas, and sanitary services except 4971 irrigation systems.

(F) Dry cleaning plants, 7216.

(G) General medical surgical hospitals, 8062.

(H) Specialty hospitals, 8069.

(I) National security, 9711.

(ii) Any source or source category listed in WAC 173-400-100, 173-400-115(2), or 173-490-030(1) except WAC 173-490-030 (1)(e) gasoline dispensing facilities.

(iii) Any of the following sources:

(A) Landfills.

(B) Sites subject to chapter 173-340 WAC Model Toxics Control Act--Cleanup regulation.

(2) Exempt sources.

(a) Containers such as tanks, barrels, drums, cans, and buckets are exempt from the requirements of this chapter unless equipped with a vent other than those required solely as safety pressure release devices.

(b) Nonprocess fugitive emissions of toxic air pollutants from stationary sources, such as construction sites, unpaved roads, coal piles, waste piles, and fuel and ash handling operations are exempt from WAC 173-460-060.

(c) The following sources are generally exempt from the requirements of WAC 173-460-050, 173-460-070, 173-460-080, and 173-460-090. However, the authority may on a case-by-case basis, require compliance with these sections if the authority determines that the amount of emissions, nature of pollutant, or source location indicate that the ambient impact should be evaluated.

(i) Perchloroethylene dry cleaners

(ii) Petroleum solvent dry cleaning systems

(iii) Solvent metal cleaners

(iv) Spray coating operations

(v) Abrasive blasting

(d) Demolition and renovation projects involving asbestos removal and disposal are exempt from the requirements of this chapter.

(e) Process vents subject to 40 C.F.R. Parts 264 and 265, Subpart AA are exempt from the requirements of this chapter.

NEW SECTION

WAC 173-460-040 NEW SOURCE REVIEW. (1) Applicability. This chapter supplements the new source review requirements of WAC 173-400-110 by adding additional new source review requirements for toxic air pollutant sources. If a notice of construction is required under both chapter 173-400 WAC and this chapter, the written applications shall be combined. A notice of construction is a written application to permit construction of a new source.

(a) The owner or operator of a new toxic air pollutant source listed in WAC 173-460-030(2) shall notify the authority prior to the construction, installation, or establishment of a new toxic air pollutant source and shall file a notice of construction application with the authority for the proposed emission unit(s). Notification and notice of construction are not required if the source is an exempt source listed in WAC 173-460-030(3) or subsection (2) of this section.

(b) The notice of construction and new source review applies only to the affected emission unit(s) and the contaminants emitted from the emission unit(s).

(c) New source review of a modification is limited to the emission unit or units proposed to be modified and the emission unit or units whose emissions of TAPs may increase as a result of the modification.

(2) The owner or operator of a new toxic air pollutant source listed in WAC 173-460-030(2) is not required to notify or file a notice of construction with the authority if any of the following conditions are met:

(a) Routine maintenance or repair requires equivalent replacement of air pollution control equipment; or

(b) The new source is a minor process change(s) that does not increase capacity and total toxic air pollutant emissions do not exceed the emission rates specified in small quantity emission rate tables in WAC 173-460-080; or

(c) The new source is the result of minor changes in raw material composition and the total toxic air pollutant emissions do not exceed the emission rates specified in the small quantity emission rate tables in WAC 173-460-080.

(3) Additional information. Within thirty days of receipt of a notice of construction, the authority may require the submission of additional plans, specifications, and other information necessary for the review of the proposed new or modified source.

(4) Requirements for new toxic air pollutant sources. The authority shall review notice(s) of construction, plans, specifications, and other associated information to determine that:

(a) The source will be in accord with applicable federal, state, and authority air pollution control rules and regulations;

(b) The source will use T-BACT for emissions control for the toxic air pollutants which are likely to increase;

(c) The source will use T-RACT for emissions control for the toxic air pollutants which are likely to remain the same or decrease; and

(d) Sources required to use T-BACT for emission control demonstrate compliance with WAC 173-460-070 by using the procedures established in WAC 173-460-090 or, failing that, demonstrates compliance, by using the additional procedures in WAC 173-460-090 and/or 173-460-100.

(4) Preliminary determination. Within thirty days after receipt of all information required, the authority shall:

(a) Make preliminary determinations on the matters set forth in this section; and

(b) Initiate compliance with the provisions of WAC 173-400-171 relating to public notice and public comment, as applicable.

(5) Final determination. If, after review of all information received including public comment, the authority finds that all the conditions in this section are satisfied, the authority shall issue a regulatory order to approve the notice of construction for the proposed new source or modification. If the authority finds that the

conditions in this section are not satisfied, the authority shall issue an order for the prevention of construction, installation, or establishment of the toxic air pollution source(s). Where ecology has jurisdiction, it will endeavor to make final determinations as promptly as possible.

(6) Appeal of decision. A final notice of construction decision may be appealed to the pollution control hearings board pursuant to chapter 43.21B RCW.

(7) Commencement of construction. The owner(s) or operator(s) of the new source shall not commence construction until the applicable notice of construction has been approved.

(8) Operation and maintenance plan. As a condition of notice of construction approval; prior to start up, the authority may require a plan for the operation and maintenance of all equipment and procedures to assure continuous compliance with this chapter.

(a) A copy of the plan shall be filed with the authority upon request.

(b) The plan shall reflect good industrial practice and may include operating parameters and maintenance procedures, and shall be updated to reflect any changes in good industrial practice.

(c) Submittal of all plans should coincide with the authorities reporting requirements where applicable.

(9) Jurisdiction. Emission of toxic air pollutants that exceed the acceptable source impact levels listed in WAC 173-460-150 and 173-460-160 requires ecology and, if applicable, authority approval as specified in WAC 173-460-090 and 173-460-100.

NEW SECTION

WAC 173-460-050 REQUIREMENT TO QUANTIFY EMISSIONS. (1) New sources.

(a) When applying for a notice of construction, an owner or operator of a new toxic air pollution source shall quantify those emissions of each TAP or combination of TAPs that:

(i) Will be used for the modeling procedures in WAC 173-460-080; and

(ii) That may be discharged after applying required control technology. The information shall be submitted to the authority.

(b) Emissions shall be quantified in sufficient detail to determine whether the source complies with the requirements of this chapter.

(2) Small quantity sources.

Sources that choose to use small quantity emission rate tables instead of using dispersion modeling shall quantify emissions as required under WAC 173-460-080, in sufficient detail to demonstrate to the satisfaction of the authority that the emissions are less than the applicable emission rates listed in WAC 173-460-080.

(3) Level of detail.

An acceptable source impact level analysis under WAC 173-460-080, may be based on a conservative estimate of emissions that represents good engineering judgment. If compliance with WAC 173-460-070 and 173-460-080 cannot be demonstrated, more precise emission estimates shall be used prior to WAC 173-460-090.

(4) Mixtures of toxic air pollutants.

(a) An owner or operator of a source that may discharge more than one toxic air pollutant may demonstrate compliance with WAC 173-460-070 and 173-460-080 by:

(i) Quantifying emissions and performing modeling for each TAP individually; or

(ii) Calculate the sum of all TAP emissions and perform modeling for the total TAP emissions and compare maximum ambient levels to the smallest ASIL; or

(iii) Equivalent procedures may be used if approved by ecology.

(b) Dioxin and furan emissions shall be considered together as one TAP and expressed as an equivalent emission of 2,3,7,8 TCDD based on the relative potency of the isomers in accordance with United States Environmental Protection Agency (EPA) guidelines.

Note: Copies of EPA "Interim procedures for estimating risks associated with exposures to mixtures of chlorinated dibenzo-p-dioxins and dibenzofurans (CDDs and CDFs). 1989 Update" are available by requesting EPA /625/3-89/016, March 1989 from ORD Publications (513) 684-7562.

(c) Polyaromatic hydrocarbon (PAH) emissions. The owner or operator of a source that may emit a mixture of polyaromatic hydrocarbon emissions shall quantify the following PAHs and shall consider them together as one TAP equivalent in potency to benzo(a)pyrene: benzo(a)anthracene, benzo(b)fluoranthene, benzo(k)fluoranthene, chrysene, dibenzo(a,h)anthracene, indenol(1,2,3-cd)pyrene, benzo(a)pyrene. The acceptable source impact analysis shall be conducted using the polyaromatic hydrocarbon emission ASIL contained in WAC 173-460-150(3).

(d) Uncontrolled roof vent emissions from primary aluminum smelters. The owner or operator of a primary aluminum smelter that may emit a mixture of polyaromatic hydrocarbons from uncontrolled roof vents shall quantify PAH emissions using either of the following methods:

(i) Quantify PAH emissions using the procedures in (c) of this subsection; or

(ii) Multiply the total particulate emission mass from the uncontrolled roof vents by the percent of the particulate that is extractable organic matter. The percent extractable organic matter shall be considered one percent of total particulate matter unless ecology determines that there is compelling scientific data which demonstrates that the use of this value is inappropriate. The acceptable source impact analysis shall be conducted using the primary aluminum smelter uncontrolled roof vent PAH emission ASIL contained in WAC 173-460-150(3). Note: For example, 100 grams of particulate air emission mass times one percent yields one gram of PAH emissions.

NEW SECTION

WAC 173-460-060 CONTROL TECHNOLOGY REQUIREMENTS. Except as provided for in WAC 173-460-040, a person shall not establish, operate, or cause to be established or operated any new toxic air pollutant source which is likely to increase TAP emissions without installing and operating T-BACT. Satisfaction of the performance requirements listed below fulfill the T-BACT requirement for those particular sources. Authorities may develop and require performance requirements in lieu of T-BACT provided that ecology approves the performance requirements as equivalent to T-BACT.

(1) Perchloroethylene dry cleaners. The entire dryer exhaust shall be vented through a control device which will reduce VOC emissions to 5 kg or less per 100 kg dry weight of cleaned articles.

(a) The control device shall meet one of the following conditions:

(i) The exhaust from a carbon adsorber shall contain less than 100 ppm perchloroethylene as measured over a period of one minute before dilution; or

(ii) The air temperature at the outlet of a refrigerated condenser shall reach seven degrees centigrade or less during the cool-down period. A temperature gauge with a minimum range from negative thirty-two to seventy-five degrees centigrade shall be installed and maintained on the condenser outlet duct; or

(iii) The demonstrated control efficiency for any other control device shall be ninety percent or greater by weight, prior to the discharge to the atmosphere measured over a complete control cycle.

(b) The operation of any perchloroethylene dry cleaner shall meet all of the following conditions:

(i) All leaking components shall be repaired immediately; and

(ii) All filtration cartridges shall be drained in the filter housing or other enclosed container before discarding the cartridges.

(2) Petroleum solvent dry cleaning systems. A petroleum solvent dry cleaning system shall include the following:

(a) All cleaned articles are dried in a solvent recovery dryer or the entire dryer exhaust is vented through a properly functioning control device which will reduce emissions to no more than 3.5 kg of VOC per 100 kg dry weight of cleaned articles; and

(b) All cartridge filtration systems are drained in their sealed housing or other enclosed container before discarding the cartridges; and

(c) All leaking components shall be repaired immediately.

(3) Chromic acid plating and anodizing. The facility-wide uncontrolled hexavalent chromium emissions from plating or anodizing tanks shall be reduced by at least ninety-five percent using either of the following control techniques:

(a) An antimist additive or other equally effective control method approved by ecology or authority; or

(b) The tank is equipped with:

(i) A close capture system which shall be in place and in operation at all times electrical current is applied to the tank; and

(ii) An emission control system which limits hexavalent chromium emissions to no more than 0.15 milligrams per ampere-hour of electrical charge applied to the tank or uncontrolled emissions shall be reduced by ninety-five percent.

(4) Chromic acid and plating (greater than 1 kilogram). If the facility-wide hexavalent chromium emissions from chromic acid plating and anodizing are greater than 1 kilogram per year after the application of control techniques required by subsection (3) of this section, the facility-wide hexavalent chromium emissions shall be reduced by at least ninety-nine percent using either of the following control techniques:

(a) An antimist additive or other equally effective control method approved by ecology or authority; or

(b) The tank is equipped with:

(i) A close capture system which shall be in place and in operation at all times electrical current is applied to the tank; and

(ii) An emissions control system which limits hexavalent chromium emissions to no more than 0.03 milligrams per ampere-hour of electrical charge applied to the tank or uncontrolled emissions shall be reduced by ninety-nine percent.

(5) Solvent metal cleaners.

(a) Any solvent metal cleaner shall include all of the following equipment:

(i) A cover for the solvent tank which shall be closed at all times except when processing work in the degreaser. However, the cover shall be closed to the maximum extent possible when parts are being degreased;

(ii) A facility for draining cleaned parts such that the drained solvent is returned to the solvent tank;

(iii) For cold solvent cleaners, a freeboard ratio greater than or equal to 0.75;

(iv) Vapor degreasers shall have:

(A) A high vapor cutoff thermostat with manual reset; and

(B) For degreasers with spray devices, a vapor-up thermostat which will allow spray operation only after the vapor zone has risen to the design level; and

(C) Either a freeboard ratio greater than or equal to 0.75 or a refrigerated freeboard chiller; and

(v) Conveyorized vapor degreasers shall have:

(A) A drying tunnel or a rotating basket sufficient to prevent cleaned parts from carrying liquid solvent out of the degreaser; and

(B) A high vapor cutoff thermostat with manual reset; and

(C) A vapor-up thermostat which will allow conveyor movement only after the vapor zone has risen to the design vapor level.

(b) The operation of any solvent metal cleaner shall meet the following requirements:

(i) Solvent shall not leak from any portion of the degreasing equipment;

(ii) Solvent, including waste solvent, shall be stored in closed containers and shall be disposed of in such a manner as to prevent its evaporation into the atmosphere;

(iii) For cold cleaners, cleaned parts shall be drained until dripping ceases; and

(iv) Degreasers shall be constructed to allow liquid solvent from cleaned parts to drain into a trough or equivalent device and return to the solvent tank.

(c) For open-top vapor degreasers, solvent drag-out shall be minimized by the following measures:

(i) Racked parts shall be allowed to fully drain;

(ii) The work load shall be degreased in the vapor zone until condensation ceases;

(iii) Spraying operations shall be done within the vapor layer;

(iv) When using a powered hoist, the vertical speed of parts in and out of the vapor zone shall be less than three meters per minute (ten feet per minute);

(v) When the cover is open, the lip of the degreaser shall not be exposed to steady drafts greater than 15.3 meters per minute (fifty feet per minute); and

(vi) When equipped with a lip exhaust, the fan shall be turned off when the cover is closed.

(d) For conveyorized vapor degreasers, solvent drag-out shall be minimized by the following measures:

(i) Racked parts shall be allowed to fully drain; and

(ii) Vertical conveyor speed shall be maintained at less than three meters per minute (ten feet per minute).

(6) Abrasive blasting.

(a) Abrasive blasting should be performed inside a booth or hangar designed to capture the blast grit or overspray.

(b) Outdoor blasting of structures or items too large to be reasonably handled indoors should employ control measures such as curtailment during windy periods and enclosure of the area being blasted with tarps.

(c) Outdoor blasting should be performed with either steel shot or an abrasive containing less than one percent (by mass) which would pass through a No. 200 sieve.

(d) All abrasive blasting with sand shall be performed inside a blasting booth or cabinet.

NEW SECTION

WAC 173-460-070 AMBIENT IMPACT REQUIREMENT. When applying for a notice of construction under WAC 173-460-040, the owner or operator of a new toxic air pollutant source which is likely to increase TAP emissions shall demonstrate that emissions from the source are sufficiently low to protect human health and safety from potential carcinogenic and/or other toxic effects. Compliance shall be demonstrated in any area which does not have restricted or controlled public access. The source shall demonstrate compliance by using procedures established in this chapter after complying with the control technology requirements in WAC 173-460-060.

NEW SECTION

WAC 173-460-080 DEMONSTRATING AMBIENT IMPACT COMPLIANCE. (1) When applying for a notice of construction under WAC 173-460-040, the owner or operator of a new toxic air pollutant source which is likely to increase TAP emissions shall complete an acceptable source impact level analysis for Class A and Class B TAPs. The authority may complete this analysis.

(2) Acceptable source impact analysis.

(a) Carcinogenic effects. The owner or operator shall use dispersion modeling to estimate the maximum incremental ambient impact of each Class A TAP from the source and compare the estimated incremental ambient values to the Class A acceptable source impact levels in WAC 173-460-150. If applicable, the source may use the small quantity emission rate tables in (e) of this subsection.

(b) Other toxic effects. The owner or operator shall use dispersion modeling to estimate the maximum incremental ambient impact of each Class B TAP from the source and compare the estimated ambient values to the Class B acceptable source impact levels in WAC 173-460-160. If applicable, the source may use the small quantity emission rate tables in (e) of this subsection.

(c) Dispersion modeling. The owner or operator shall use dispersion modeling techniques in accordance with EPA guidelines. If concentrations predicted by dispersion screening models exceed applicable acceptable source impact levels, more refined modeling and/or emission estimation techniques shall be used. Refined modeling techniques shall be approved by ecology and the authority. (Note: EPA's guideline on Air Quality Models, EPA 450/2-78-0277R, can be obtained through NTIS (703) 487-4650).

(d) Averaging times. The owner or operator shall use the averaging times in (d)(i), (ii), (iii) of this subsection unless alternate averaging times are approved by ecology. Ecology may allow the use of an alternate averaging time if it determines that the operating procedures of the source may cause a high concentration of a TAP for a short period and that consideration of potential health effects due to peak exposures may be warranted for the TAP.

(i) An annual average shall be used for Class A TAPs listed in WAC 173-460-150(2).

(ii) The averaging times specified in WAC 173-460-150(3) shall be used for Class A TAPs listed in WAC 173-460-150(3).

(iii) A twenty-four-hour averaging time shall be used for Class B TAPs listed in WAC 173-460-160.

(e) Small quantity emission rates. Instead of using dispersion modeling to show compliance with ambient impact demonstration requirements in WAC 173-460-080 and 173-460-090, a source may use the small quantity emission rate tables for all toxic air pollutants with acceptable source impact levels equal to or greater than 0.001 ug/m3. A source must first meet control technology and emission quantification requirements of WAC 173-460-050 and 173-460-060, then demonstrate that the source emission rate does not exceed the rates specified in the appropriate table below.

SMALL QUANTITY EMISSION RATES
CLASS A TOXIC AIR POLLUTANTS

Acceptable Source Impact Level (Annual ug/m3)	TAP Emissions Pounds per Year (10 meter stack and downwash)
0.001 to 0.0099	0.5
0.01 to 0.06	10
0.07 to 0.12	20
0.13 to 0.99	50
1.0 to 10	500

SMALL QUANTITY EMISSION RATES
CLASS B TOXIC AIR POLLUTANTS

Acceptable Source Impact Level (24 hour ug/m3)	TAP Emissions Pounds per Year	Pounds per Hour
Less than 1	175	0.02
1 to 9.9	175	0.02
10 to 29.9	1,750	0.20
30 to 59.9	5,250	0.60
60 to 99.9	10,500	1.20
100 to 129.9	17,500	2.0
130 to 250	22,750	2.6
Greater than 250	43,748	5.0

(3) Criteria for compliance. Compliance with WAC 173-460-070 is demonstrated if the authority determines that, on the basis of the acceptable source impact analysis, the source's maximum incremental ambient air impact levels do not exceed the Class A or Class B acceptable source impact levels in WAC 173-460-150 and 173-460-160; or, if applicable, the source TAP emission rates do not exceed the rates specified in subsection (2)(e) of this section.

NEW SECTION

WAC 173-460-090 SECOND TIER ANALYSIS. (1) Applicability.

(a) The owner or operator who cannot demonstrate class A or class B TAP source compliance with WAC 173-460-070 and 173-460-080 using an acceptable source impact level analysis as provided in WAC 173-460-080(2), may submit a petition requesting ecology perform a second tier analysis evaluation to determine a means of compliance with WAC 173-460-070 and 173-460-080 by establishing allowable emissions for the source. Petitions for second tier analysis evaluation shall be submitted to the local authority or ecology if ecology has jurisdiction over the source. Petitions received by local authorities shall be submitted to ecology within ten days of receipt. A second tier analysis evaluation may be requested when a source wishes to more accurately characterize risks, to justify risks greater than acceptable source impact levels, or to otherwise modify assumptions to more accurately represent risks. Risks may be more accurately characterized by utilizing updated EPA unit risk factors, inhalation reference doses, or other EPA recognized or approved methods. Ecology shall specify the maximum allowable emissions of any class A or class B TAP source based on ecology's second tier analysis evaluation.

(b) Ecology shall evaluate a source's second tier analysis only if:

(i) The authority has advised ecology that other conditions for processing the notice of construction have been met; and

(ii) Emission controls contained in the conditional notice of construction represent at least T-BACT; and

(iii) Ambient concentrations exceed acceptable source impact levels after using more refined emission quantification and air dispersion modeling techniques.

(c) Ecology shall determine whether the conditions in (b)(i), (ii), and (iii) of this subsection for a second tier analysis have been satisfied within ten working days of receipt of all information needed to make the determination. The matter shall be returned to the authority if ecology finds the conditions for a second tier analysis evaluation have not been met.

(2) Jurisdiction.

(a) Any second tier analysis application submitted by a source wishing to emit toxic air pollutants at levels greater than the acceptable source impact level contained in WAC 173-460-150 or 173-460-160 shall be approved or rejected by ecology.

(b) Any new emission limits approved by ecology as a result of the second tier analysis evaluation shall be enforced by the authority provided the authority approves the new emission limits.

(3) Approval criteria.

(a) Based on the second tier analysis, ecology may approve the emissions of TAPs from a source where ambient concentrations exceed acceptable source impact levels only if it determines that emission controls represent at least T-BACT and the source demonstrates that emissions of Class A TAPs are not likely to result in an increased cancer risk of more than one in one hundred thousand. The emission of Class A TAPs at levels likely to result in an increased cancer risk of more than one in one hundred thousand requires the approval of the director after complying with WAC 173-460-100.

(b) Ecology shall consider the second tier analysis and other information submitted by the applicant as well as department of health comments.

(i) Comments from other agencies and universities with appropriate expertise may also be considered in the decision to approve emissions that exceed acceptable source impact levels.

(ii) Public comments shall be considered if the source applies for a risk management decision under WAC 173-460-100.

(4) Contents of the second tier analysis.

(a) The second tier analysis consists of a health impact assessment. The applicant shall complete and submit a health impact assessment to ecology which includes the following information. Ecology may approve the submittal of less information if it determines that such information is sufficient to perform the second tier analysis evaluation. The health impact assessment shall be prepared in accordance with EPA's risk assessment guidelines as defined in WAC 173-460-020(8).

(i) Demographics such as population size, growth, and sensitive subgroups;

(ii) Toxicological profiles of all toxic air pollutants that exceed the ASIL;

(iii) Characterization of existing pathways and total daily intake for toxic air pollutants that exceed the ASIL;

(iv) Contribution of the proposed source toward total daily intake for toxic air pollutants that exceed the ASIL;

(v) Using existing data, characterization of risk from current exposure to the toxic air pollutants that exceed the ASIL. This includes existing TAP sources in the area, and anticipated risk from the new source;

(vi) Additive cancer risk for all Class A toxic air pollutants which may be emitted by the source;

(vii) Other information requested by ecology and pertinent to ecology's decision to approve the second tier application;

(viii) Uncertainty in the data; and

(ix) Length of exposure and persistence in the environment.

(b) The health assessment shall utilize current scientific information. New scientific information on the toxicological characteristics of toxic air pollutants may be used to justify modifications of upper bound unit risk factors used to calculate ASILs in WAC 173-460-150 and/or absorption rates of individual toxic air pollutants if ecology determines there is compelling scientific data which demonstrates that the use of EPA recognized or approved methods are inappropriate.

(5) Additional information.

(a) If approved by ecology, newly discovered scientific information which was unavailable at the time of the original submission of the health assessment may be used to justify modifications of the original health assessment. Ecology may approve the additional information if the source exercised due diligence at the time of original submission.

(b) Within thirty days after receipt of the second tier analysis and all supporting data and documentation, ecology may require the submission of additional information needed to evaluate the second tier analysis.

(6) Determination.

(a) If the second tier analysis is approved by ecology, ecology will return the petition to the authority and the authority may approve the notice of construction.

(b) The authority shall specify allowable emissions consistent with ecology's second tier analysis evaluation determination expressed in weight of pollutant per unit time for each emissions unit involved in the application. The notice of construction shall also include all requirements necessary to assure that conditions of this chapter and chapter 173-400 WAC are satisfied.

(7) Public notification requirements.

Ecology decisions regarding second tier analysis or decisions under WAC 173-460-100 shall comply with public notification requirements contained in WAC 173-400-171.

NEW SECTION

WAC 173-460-100 REQUEST FOR RISK MANAGEMENT DECISION. (1) Applicability. The owner or operator of a source that emits Class A TAPs that are likely to result in an increased cancer risk of more than one in one hundred thousand may request that ecology establish allowable emissions for the source.

(2) Contents of the application.

The applicant shall meet the submittal requirements of WAC 173-460-090(1) and submit all materials required under WAC 173-460-090 (4) and (5). The applicant may submit the request for a risk management decision concurrently with the second tier analysis application. Prior denial of the second tier analysis application under WAC 173-460-090(6) is not required.

(3) Criteria for approval. Ecology may approve the emissions of TAPs from a source where ambient concentrations are likely to result in an increased cancer risk of more than one in one hundred thousand only if the source first demonstrates the following:

(a) Proposed emission controls represent all known available and reasonable technology; and

(b) Application of all known available toxic air pollution prevention methods to reduce, avoid, or eliminate toxic air pollutants prior to their generation including recycling, chemical substitution, and efforts to redesign processes; and

(c) The proposed changes will result in a greater benefit to the environment as a whole.

(4) Additional methods to reduce toxic air pollutants. In addition to the requirements in subsection (3) of this section, the owner or operator may propose and ecology may consider innovative or established measures that are likely to reduce community exposure to toxic air pollutants provided that such measures are not already required. Examples of innovative measures include but are not limited to:

(a) Reducing vehicle miles traveled to the facility through vanpool programs and transportation management plans;

(b) Permanent removal of woodstoves; and

(c) Purchasing used automobiles. Examples of established methods include, but are not limited to, emission bubbles and offsets.

(5) Public involvement. Ecology will endeavor to initiate public notice and comment within thirty days of receipt of a completed risk management decision application. In addition to the public notice and comment requirements of WAC 173-400-171, the owner or operator shall:

(a) Present the results of the second tier analysis, the proposed emission controls, pollution prevention methods, additional proposed measures, and remaining risks; and

(b) Participate in discussions with and answer questions from the affected community.

(5) Time limitation. The owner or operator shall commence construction within eighteen months of the director's approval.

NEW SECTION

WAC 173-460-110 ACCEPTABLE SOURCE IMPACT LEVELS. There are three types of acceptable source impact levels: Risk-based, threshold-based, and special acceptable source impact levels. They are computed as follows:

(1) Risk-based acceptable source impact levels for Class A TAPs. Risk-based acceptable source impact levels means the annual average concentration, in micrograms per cubic meter, that may cause an increased cancer risk of one in one million. Ecology shall calculate the risk-based acceptable source impact levels for Class A TAPs in WAC 173-460-150(2) using the following equation:

$$\text{Risk based ASIL } (ug/m3) = \frac{RISK}{URF}$$

Where:
RISK=Cancer risk level (1 in 1,000,000)
URF=Upper bound unit risk factor as published in IRIS data base or other appropriate sources $(ug/m3)^{-1}$.

(2) Threshold-based acceptable source impact levels for Class B TAPs. Threshold-based acceptable source impact levels in WAC 173-460-160 shall be determined as follows:

(a) If a Class B TAP has an Environmental Protection Agency Inhalation Reference Dose, the inhalation reference dose and specified averaging time shall be used.

(b) Other Class B TAP acceptable source impact levels shall be determined by dividing the TLV-TWA by three hundred to calculate a twenty-four hour TWA acceptable source impact level.

(3) Special acceptable source impact levels.

(a) Ecology may establish special acceptable source impact levels for TAPs for which upper bound risk factors or TLVs have not been established, or for mixtures of compounds if it determines that the above acceptable source impact level methods are not appropriate, do not adequately protect human health or are overly stringent.

(b) The averaging times for special ASILs are listed in WAC 173-460-150(3).

NEW SECTION

WAC 173-460-120 SCIENTIFIC REVIEW AND AMENDMENT OF ACCEPTABLE SOURCE IMPACT LEVELS AND LISTS. (1) Ongoing scientific review.

(a) To use the best available scientific information, ecology shall conduct an ongoing review of information concerning whether to add or delete toxic air pollutants to WAC 173-460-150 or 173-460-160, what acceptable source impact levels should be used to review emissions of TAPs, source applicability and exemptions.

(b) A complete review shall be made at least once every three years at which time ecology shall consider scientific information developed by the E.P.A., Washington department of health, other states or other scientific organizations, scientific information provided by any person, and results of second tier analyses evaluations.

(2) Criteria for listing as Class A or Class B TAP.

(a) Ecology shall list a substance or group of substances as Class A or Class B TAPs if the department has reason to believe that the compound or group of compounds are likely to be emitted to the air from an air pollution source and the air emission of such compound or compounds could impact public health. The compounds shall be removed from the list if ecology determines that these conditions no longer exist.

(b) Ecology may list mixtures of compounds as Class A and/or Class B TAPs if ecology determines that the health impact of the emission mixture is likely to be different from the known individual chemical impacts.

(3) Acceptable source impact level (ASIL).

Ecology may adopt an ASIL only if ecology determines that concentrations at that level will not unreasonably endanger human health.

NEW SECTION

WAC 173-460-130 FEES. (1) Pursuant to RCW 70.94.152, ecology or the authority may charge a fee for the review of notices of construction.

(2) The fee imposed under this section may not exceed the cost of reviewing plans, specifications, and other information and administering such notice.

NEW SECTION

WAC 173-460-140 REMEDIES. Violations of this chapter are subject to the penalty provisions and/or other remedies provided in chapter 70.94 RCW.

NEW SECTION

WAC 173-460-150 CLASS A TOXIC AIR POLLUTANTS: KNOWN, PROBABLE AND POTENTIAL HUMAN CARCINOGENS AND ACCEPTABLE SOURCE IMPACT LEVELS.

(1) TABLE I
CLASS A TOXIC AIR POLLUTANTS
Known and Probable Carcinogens

CAS #	SUBSTANCE
75-07-0	Acetaldehyde
107-13-1	Acrylonitrile
309-00-2	Aldrin
---	Aluminum smelter polyaromatic hydrocarbon emissions
117-79-3	2-Aminoanthraquinone
97-56-3	o-Aminoazotoluene
92-67-1	4-Aminobiphenyl
61-82-5	Amitrole
---	Arsenic and inorganic arsenic compounds
1332-21-4	Asbestos

CAS #	SUBSTANCE
2465-27-2	Auramine (technical grade)
56-55-3	Benz(a)anthracene
71-43-2	Benzene
92-87-5	Benzidine and its salts
50-32-8	Benzo(a)pyrene
204-99-2	Benzo(b)fluoranthene
205-82-3	Benzo(j)fluoranthene
205-08-9	Benzo(k)fluoranthene
1694-09-3	Benzyl violet 4b
---	Beryllium and compounds
111-44-4	Bis(2-chloroethyl)ether
117-81-7	Bis(2-ethylhexyl)phthalate
542-88-1	Bis(chloromethyl)ether and technical-grade chloromethyl methyl ether
106-99-0	1,3-Butadiene
3068-88-0	B-Butyrolactone
---	Cadmium and compounds
56-23-5	Carbon tetrachloride
57-74-9	Chlordane
74-87-3	Chlorodibromoethane
67-66-3	Chloroform
107-30-2	Chloromethyl methyl ether (technical-grade)
108-43-0	Chlorophenols
126-99-8	Chloroprene
---	Chromium, hexavalent metal and compounds
---	Coke oven emissions
8001-58-9	Creosote
135-20-6	Cupferron
94-75-7	2,4-D and esters
50-29-3	DDT (1,1,1 Trichloro-2,2-Bis(p-chlorophenyl)-ethane)
613-35-4	N,N-Diacetylbenzidine
101-80-4	4,4'-Diaminodiphenyl ether
226-36-8	Dibenz(a,h)acridine
53-70-3	Dibenz(a,h)anthracene
224-42-0	Dibenz(a,j)acridine
189-64-0	Dibenzo(a,h)pyrene
191-30-0	Dibenzo(a,l)pyrene
189-55-9	1,2:7,8-Dibenzopyrene (dibenzo(a,i)pyrene)
192-65-4	Dibenzo(a,e)pyrene
	1,4-Dichloro-2-butene
28434-86-8	3,3'-Dichloro-4,4'-diaminodiphenyl ether
106-46-7	1,4-Dichlorobenzene
91-94-1	3,3'-Dichlorobenzidine
107-06-2	1,2-Dichloroethane (ethylene chloride)
75-09-2	Dichloromethane (methylene chloride)
696-28-6	Dichlorophenylarsine (arsenic group)
78-87-5	1,2-Dichloropropane
60-57-1	Dieldrin
1615-80-1	1,2-Diethylhydrazine
101-90-6	Diglycidyl resorcinol ether
119-90-4	3,3'-Dimethoxybenzidine (ortol-dianisidine)
77-78-1	Dimethyl sulfate
540-73-8	1,2-Dimethylhydrazine
25321-14-6	Dinitrotoluenes (mixed)
123-91-9	1,4-Dioxane
---	Dioxins and furans
122-66-7	1,2-Diphenylhydrazine
106-93-4	Ethylene Dibromide
75-21-8	Ethylene oxide
50-00-0	Formaldehyde
	Furium (nitrofuran group)
765-34-4	Glyciadaldehyde
76-44-8	Heptachlor

CAS #	SUBSTANCE
118-74-1	Hexachlorobenzene
319-84-6	Hexachlorocyclohexane (Lindane) Alpha BHC
319-85-7	Hexachlorocyclohexane (Lindane) Beta BHC
580-89-9	Hexachlorocyclohexane (Lindane) Gamma BHC
67-72-1	Hexachloroethane
193-39-5	Indeno(1,2,3-cd)pyrene
---	Isopropyl oils
301-04-2	Lead acetate
7446-27-7	Lead phosphate
129-15-7	2-Methyl-1-nitroanthraquinone
592-62-1	Methylazoxymethanol & acetate
3697-24-3	5-Methylchrysene
101-14-4	4,4'-Methylenebis(2-chloroaniline) (MBOCA)
838-88-0	4,4'-Methylenebis(2-methylaniline)
101-77-9	4,4-Methylenedianiline
13552-44-8	4,4-Methylenedianiline dihydrochloride
64091-91-4	4-(Methylnitrosamino)-1-(3-pyridyl)-1-butanone
---	Mirex
139-91-3	5-(Morpholinomethyl)-3-((5-nitrofurfurylidene)amino)-2-oxazolidin one
924-16-3	N-Nirtrosodi-n-butylamine
134-32-7	1-Napthylamine
7440-02-0	Nickel and compounds
531-82-8	N-(4-(5-Nirto-2-furyl)-2-thiazolyl)acetamide
759-73-9	N-Nirtoso-n-ethylurea (NEU)
621-64-7	N-Nirtosodi-n-propylamine
10595-95-6	N-Nirtosomethylethylamine
59-89-2	N-Nirtosomorpholine
86-30-6	N-Nirtrsdiphenylamine
55-18-5	N-Nirtrosodiethylamine (diethylnitrosoamine) (DEN)
62-75-9	N-Nirtrosodimethylamine
602-87-9	5-Nitroacenaphthene
1836-75-5	Nitrofen
	Nitrofurans Furazolidone
59-87-0	Nitrofurazone
555-84-9	1-(5-Nitrofurfurylidene)amino)-2-imidazolidinone
126-85-2	Nitrogen mustard N-oxide
302-70-5	Nitrogen mustard n-oxide hydrochloride
79-46-9	2-Nitropropane
615-53-2	N-Nitroso-n-methylurethane
2646-17-5	Oil orange SS
794-93-4	Panfuran S (dihydroxymethylfuratrizine)
127-18-4	Perchloroethylene (tetrachloroethylene)
63-92-3	Phenoxybenzamine hydrochloride
	N-Phenyl-2-napthylamine
---	Polyaromatic Hydrocarbons (PAH)
1336-36-3	Polychlorinated biphenyls (PCBs)
3761-53-3	Ponceau MX
	P(p)(alpha, alpha, alpha)-Tetra-chlorotoluene
1746-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin (2,3,7,8-TCDD)
139-65-1	4,4'-Thiodianiline
1314-20-1	Thorium dioxide
584-84-9	2,4-Toluene diisocyanate
95-53-4	o-Toluidine & its hydrochloride
8001-35-2	Toxaphene
55738-54-0	Trans-2((Dimethylamino)methylimino)-5-(5-nitro-2-furyl)
	vinyl-1,3,4-oxadiazole
79-01-6	Trichloroethylene
25167-82-2	Trichlorophenol (mixed)
75-01-4	Vinyl Chloride

(2) TABLE II
CLASS A TOXIC AIR POLLUTANTS
WITH ESTABLISHED
ACCEPTABLE SOURCE IMPACT LEVELS

CAS #	SUBSTANCE	10-6 RISK ASIL MICRO-GRAMS/M^3 ANNUAL AVERAGE
75-07-0	Acetaldehyde	0.4500000
107-13-1	Acrylonitrile	0.0150000
309-00-2	Aldrin	0.0002000
---	Arsenic and inorganic arsenic compounds	0.0002300
1332-21-4	Asbestos (Note: fibers/ml)	0.0000042
71-43-2	Benzene	0.1200000
92-87-5	Benzidine and its salts	0.0000150
50-32-8	Benzo(a)pyrene	0.0006000
---	Beryllium and compounds	0.0004200
111-44-4	Bis(2-chloroethyl)ether	0.0030000
542-88-1	Bis(chloromethyl)ether and technical-grade chloromethyl methyl ether	0.0000160
---	Cadmium and compounds	0.0005600
56-23-5	Carbon tetrachloride	0.0670000
57-74-9	Chlordane	0.0027000
67-66-3	Chloroform	0.0430000
108-43-0	Cholorphenols	0.1800000
---	Chromium, hexavalent metal and compounds	0.0000830
---	Coke oven emissions	0.0016000
50-29-3	DDT (1,1,1 Trichloro-2,2-Bis-(p-chlorophenyl)-ethane)	0.0100000
	1,4-Dichloro-2-butene	0.0003800
107-06-2	1,2-Dichloroethane (ethylene chloride)	0.0400000
75-09-2	Dichloromethane (methylene chloride)	2.0000000
60-57-1	Dieldrin	0.0002000
122-66-7	1,2-Diphenylhydrazine	0.0045000
106-93-4	Ethylene Dibromide	0.0045000
75-21-8	Ethylene oxide	0.0100000
50-00-0	Formaldehyde	0.0770000
76-44-8	Heptachlor	0.0007700
118-74-1	Hexachlorobenzene	0.0020000
67-72-1	Hexachloroethane	0.2500000
127-18-4	Perchloroethylene (tetrachloroethylene)	1.1000000
1746-01-6	2,3,7,8-Tetrachlorodibenzi-p-dioxin (2,3,7,8-TCDD)	0.00000003
8001-35-2	Toxaphene	0.0030000
79-01-6	Trichloroethylene	0.8000000
25167-82-2	Trichlorophenol (mixed)	0.1800000
75-01-4	Vinyl Chloride	0.0230000

(3) TABLE III
CLASS A TOXIC AIR POLLUTANTS
WITH SPECIAL ACCEPTABLE SOURCE
IMPACT LEVELS

CAS #	SUBSTANCE	ASIL MICRO-GRAMS/M³	AVERAGING TIME
---	Primary aluminum smelter uncontrolled roof vent polyaromatic hydrocarbon (PAH) emissions (Note: Quantify according to WAC 173-460-050 (4)(d))	0.0013	Annual
61-82-5	Amitrole	0.6	24 hour
106-99-0	1,3-Butadiene	73.3	24 hour
126-99-8	B-Chloroprene	116.6	24 hour
94-75-7	2,4-D and esters	33.3	24 hour
106-46-7	1,4-Dichlorobenzene	1500	24 hour
78-87-5	1,2-Dichloropropane	1166.6	24 hour
77-78-1	Dimethyl sulfate	1.6	24 hour
540-73-8	1,2-Dimethylhydrazine	3.3	24 hour
123-91-9	1,4-Dioxane	300	24 hour
58-89-9	Lindane	1.6	24 hour
101-14-4	4,4'-Methylenebis (2-Chloroaniline) (MBOCA)	0.7	24 hour
101-77-9	4,4-Methylenedianiline	2.6	24 hour
7440-02-0	Nickel and compounds	3.3	24 hour
79-46-9	2-Nitropropane	116.6	24 hour
---	Polyaromatic hydrocarbon (PAH) emissions (Note: Quantify according to WAC 173-460-050 (4)(d))	0.0006	Annual
584-84-9	2,4-Toluene diisocyanate	0.1	24 hour
95-53-4	O-Toluidine	30	24 hour

NEW SECTION

WAC 173-460-160 CLASS B TOXIC AIR POLLUTANTS AND ACCEPTABLE SOURCE IMPACT LEVELS. The following table lists Class B toxic air pollutants and acceptable source impact levels:

CLASS B TOXIC AIR POLLUTANTS
AND
ACCEPTABLE SOURCE IMPACT LEVELS

CAS #	SUBSTANCE	ASIL MICROGRAMS/M³ TWENTY-FOUR-HOUR AVERAGE
86-88-4	ANTU	1.0
75-07-0	Acetic acid	83.3
108-24-7	Acetic anhydride	66.6
67-64-1	Acetone	5927.4
75-05-8	Acetonitrile	233.1
79-27-6	Acetylene tetrabromide	50.0
107-02-8	Acrolein	0.8

CAS #	SUBSTANCE	ASIL MICROGRAMS/M3 TWENTY-FOUR-HOUR AVERAGE
79-06-1	Acrylamide	0.1
79-10-7	Acrylic acid	99.9
107-18-6	Allyl alcohol	16.7
106-92-3	Allyl glycidyl ether (AGE)	73.3
2179-59-1	Allyl propyl disulfide	40.0
7429-90-5	Aluminum, Al alkyls	6.7
7429-90-5	Aluminum, as AL metal dust	33.3
7429-90-5	Aluminum, as AL pyro powders	16.7
7429-90-5	Aluminum, as Al soluble salts	6.7
7429-90-5	Aluminum, as Al welding fumes	16.7
504-29-0	2-Aminopyridine	6.7
7664-41-7	Ammonia	59.9
12125-02-9	Ammonium chloride fume	33.3
3825-26-1	Ammonium perfluorooctanoate	0.3
7773-06-0	Ammonium sulfamate	33.3
628-63-7	n-Amyl acetate	1764.9
626-38-0	sec-Amyl acetate	2214.5
62-53-3	Aniline & homologues	33.3
29191-52-4	Anisidine (o-,p- isomers)	1.7
7440-36-0	Antimony & compounds as Sb	1.7
1309-64-4	Antimony trioxide, as Sb	1.7
7784-42-1	Arsine	0.7
8052-42-4	Asphalt (petroleum) fumes	16.7
1912-24-9	Atrazine	16.7
86-50-0	Azinphos-methyl	0.7
7440-39-3	Barium, soluble compounds Ba	1.7
17804-35-2	Benomyl	33.3
94-36-0	Benzoyl Peroxide	16.7
100-44-7	Benzyl chloride	16.7
92-52-4	Biphenyl	5.0
1304-82-1	Bismuth telluride	33.3
1304-82-1	Bismuth telluride Se doped	16.7
1303-96-4	Borates, anhydrous	3.3
1303-96-4	Borates, decahydrate	16.7
1303-96-4	Borates, pentahydrate	3.3
1303-86-2	Boron oxide	33.3
10294-33-4	Boron tribromide	33.3
7726-95-6	Boron trifluoride	10.0
314-40-9	Bromacil	33.3
7726-95-6	Bromine	2.3
7789-30-2	Bromine pentafluoride	2.3
75-25-2	Bromoform	16.7
106-97-8	Butane	6327.0
111-76-2	2-Butoxyethanol	399.6
123-86-4	n-Butyl acetate	2364.3
105-46-4	sec-Butyl acetate	3163.5
540-88-5	tert-Butyl acetate	3163.5
141-32-2	Butyl acrylate	183.2
71-36-3	n-Butyl alcohol	499.5
78-92-2	sec-Butyl alcohol	1015.7
75-65-0	tert-Butyl alcohol	999.0
1189-85-1	tert-Butyl chromate, as CrO3	0.3
2426-08-6	n-Butyl glycidyl ether (BGE)	449.6
138-22-7	n-Butyl lactate	83.3
109-79-5	Butyl mercaptan	5.0
109-73-9	Butylamine	50.0
89-72-5	o-sec-Butylphenol	99.9
98-51-1	p-tert-Butyltoluene	199.8
156-62-7	Calcium cyanamide	1.7
1305-62-0	Calcium hydroxide	16.7
1305-78-8	Calcium oxide	6.7

CAS #	SUBSTANCE	ASIL MICROGRAMS/M³ TWENTY-FOUR-HOUR AVERAGE
76-22-2	Camphor, synthetic	40.0
105-60-2	Caprolactam, dust	3.3
105-60-2	Caprolactam, vapor	66.6
2425-06-1	Captafol	0.3
133-06-2	Captan	16.7
63-25-2	Carbaryl	16.7
1563-66-2	Carbofuran	0.3
1333-86-4	Carbon black	11.7
75-15-0	Carbon disulfide	99.9
558-13-4	Carbon tetrabromide	4.7
353-50-4	Carbonyl fluoride	16.7
120-80-9	Catechol	66.6
21351-79-1	Cesium hydroxide	6.7
8001-35-2	Chlorinated camphene	1.7
---	Chlorinated diphenyl oxide	1.7
7782-50-5	Chlorine	10.0
10049-04-4	Chlorine dioxide	1.0
7790-91-2	Chlorine trifluoride	1.3
600-25-9	1-Chloro-1-nitropropane	33.3
107-20-0	Chloroacetaldehyde	10.0
532-27-4	a-Chloroacetophenone	1.0
79-04-9	Chloroacetyl chloride	0.7
2698-41-1	o-Chlorobenylidene malonitrile	1.3
108-90-7	Chlorobenzene	1165.5
74-97-5	Chlorobromomethane	3496.5
75-45-6	Chlorodifluoromethane	11655.0
76-15-3	Chloropentafluoroethane	21045.6
76-06-2	Chloropicrin	2.3
2039-87-4	o-Chlorostyrene	949.1
95-49-8	o-Chlorotoluene	832.5
2921-88-2	Chlorpyrifos	0.7
7440-47-3	Chromium (II) compounds, as Cr	1.7
7440-47-3	Chromium (III) compounds, Cr	1.7
7440-47-3	Chromium (metal)	1.7
14977-61-8	Chromyl chloride	0.5
2971-90-6	Clopidol	33.3
7440-48-4	Cobalt as Co metal Dust and fu	0.2
10210-68-1	Cobalt carbonyl as Co	0.3
16842-03-8	Cobalt hydrocarbonyl	0.3
7440-50-8	Copper, Dusts and mists, as Cu	3.3
7440-50-8	Copper, Fume	0.7
---	Cotton dust, raw	0.7
1319-77-3	Cresol, all isomers	73.3
4170-30-3	Crotonaldehyde	20.0
299-86-5	Crufomate	16.7
98-82-2	Cumene	815.9
420-04-2	Cyanamide	6.7
151-50-8	Cyanides, as CN	16.7
460-19-5	Cyanogen	66.6
506-77-4	Cyanogen chloride	2.0
110-82-7	Cyclohexane	3496.5
108-93-0	Cyclohexanol	666.0
108-94-1	Cyclohexanone	333.0
110-83-8	Cyclohexene	3380.0
108-91-8	Cyclohexylamine	133.2
121-82-4	Cyclonite	5.0
542-92-7	Cyclopentadiene	666.0
287-92-3	Cyclopentane	5727.6
13121-70-5	Cyhexatin	16.7
94-75-7	2,4-D	33.3
17702-41-9	Decaborane	1.0

CAS #	SUBSTANCE	ASIL MICROGRAMS/M³ TWENTY-FOUR-HOUR AVERAGE
8065-48-3	Demeton	0.3
117-81-7	Di(2-ethylhexyl)phthalate	16.7
123-42-2	Diacetone alcohol	799.2
333-41-5	Diazinon	0.3
334-88-3	Diazomethane	1.3
19287-45-7	Diborane	0.3
107-66-4	Dibutyl phosphate	16.7
84-74-2	Dibutyl phthalate	16.7
102-81-8	2-N-Dibutylaminoethanol	46.6
594-72-9	1,1-Dichloro-1-nitroethane	33.3
118-52-5	1,3-Dichloro-5,5-dimethyl hydantoin	0.7
7572-29-4	Dichloroacetylene	1.3
95-50-1	o-Dichlorobenzene	999.0
106-46-7	p-Dichlorobenzene	1498.5
75-71-8	Dichlorodifluoromethane	16483.5
75-34-3	1,1-Dichloroethane	2697.3
111-44-4	Dichloroethyl ether	99.9
540-59-0	1,2-Dichloroethylene	2630.7
75-43-4	Dichlorofluoromethane	133.2
78-87-5	1,2-Dichloropropane	1165.5
542-75-6	Dichloropropene	16.7
75-99-0	2,2-Dichloropropionic acid	20.0
76-14-2	Dichlorotetrafluoroethane	23310.0
62-73-7	Dichlorvas	3.3
141-66-2	Dicrotophos	0.8
77-73-6	Dicyclopentadiene	99.9
102-54-5	Dicyclopentadienyl iron	33.3
60-57-1	Dieldrin	0.8
111-42-2	Diethanolamine	50.0
96-22-0	Diethyl ketone	2347.7
84-66-2	Diethyl phthalate	16.7
109-89-7	Diethylamine	99.9
100-37-8	Diethylaminoethanol	166.5
111-40-0	Diethylene triamine	13.3
75-61-6	Difluorodibromomethane	2863.8
2238-07-5	Diglycidyl ether	1.7
108-83-8	Diisobutyl ketone	499.5
108-18-9	Diisopropylamine	66.6
127-19-5	Dimethyl acetamide	116.6
124-40-3	Dimethylamine	59.9
121-69-7	Dimethylaniline	83.3
68-12-2	Dimethylformamide	99.9
57-14-7	1,1-Dimethylhydrazine	3.3
131-11-3	Dimethylphthalate	16.7
148-01-6	Dinitolmide	16.7
534-52-1	Dinitro-o-cresol	0.7
528-29-0	Dinitrobenzene, all isomers	3.3
78-34-2	Dioxathion	0.7
122-39-4	Diphenylamine	33.3
123-19-3	Dipropyl ketone	782.6
34590-94-8	Dipropylene glycol methyl ether	1998.0
85-00-7	Diquat	1.7
97-77-8	Disulfiram	6.7
298-04-4	Disulfuton	0.3
128-37-0	2,6-Ditert. butyl-p-cresol	33.3
330-54-1	Diuron	33.3
1321-74-0	Divinyl benzene	166.5
2104-64-5	EPN	1.7
115-29-7	Endosulfan	0.3
72-20-8	Endrin	0.3
13838-16-9	Enflurane	1914.8

CAS #	SUBSTANCE	ASIL MICROGRAMS/M³ TWENTY-FOUR-HOUR AVERAGE
141-43-5	Ethanolamine	26.6
563-12-2	Ethion	1.3
110-80-5	2-Ethoxyethanol	63.3
111-15-9	2-Ethoxyethyl acetate	89.9
60-29-7	Ethyl Ether	3996.0
141-78-6	Ethyl acetate	4662.0
140-88-5	Ethyl acrylate	66.6
64-17-5	Ethyl alcohol	6327.0
541-85-5	Ethyl amyl ketone	432.9
100-41-4	Ethyl benzene	1448.6
74-96-4	Ethyl bromide	2963.7
106-35-4	Ethyl butyl ketone	765.9
75-00-3	Ethyl chloride	8658.0
109-94-4	Ethyl formate	999.0
75-08-1	Ethyl mercaptan	3.3
78-10-4	Ethyl silicate	283.1
75-04-7	Ethylamine	59.9
107-07-3	Ethylene chlorohydrin	10.0
107-21-1	Ethylene glycol	416.3
628-96-6	Ethylene glycol dinitrate	1.0
107-15-3	Ethylenediamine	83.3
151-56-4	Ethylenimine	3.3
16219-75-3	Ethylidene norbornene	83.3
100-74-3	N-Ethylmorpholine	76.6
22224-92-6	Fenamiphos	0.3
115-90-2	Fensulfothion	0.3
55-38-9	Fenthion	0.7
14484-64-1	Ferbam	33.3
12604-58-9	Ferrovanadium dust	3.3
---	Febrous glass dust	33.3
---	Fluorides, as F	8.3
7782-41-4	Fluorine	6.7
944-22-9	Fonofos	0.3
75-12-7	Formamide	50.0
64-18-6	Formic acid	30.0
98-01-1	Furfural	26.6
98-00-1	Furfuryl alcohol	133.2
7782-65-2	Germanium tetrahydride	2.0
111-30-8	Glutaraldehyde	2.3
556-52-5	Glycidol	249.8
7440-58-6	Hafnium	1.7
151-67-7	Halothane	1332.0
142-82-5	Heptane (n-Heptane)	5328.0
87-68-3	Hexachlorobutadiene	0.8
77-47-4	Hexachlorocyclopentadiene	0.3
1335-87-1	Hexachloronaphthalene	0.7
684-16-2	Hexafluoroacetone	2.3
822-06-0	Hexamethylene diisocyanate	0.1
100-54-3	Hexane (n-Hexane)	599.4
---	Hexane, other isomers	5994.0
591-78-6	2-Hexanone (MBK)	66.6
108-84-9	sec-Hexyl acetate	999.0
107-41-5	Hexylene glycol	416.3
10035-10-6	Hydrogen bromide	33.3
7647-01-0	Hydrogen chloride	23.3
74-90-8	Hydrogen cyanide	33.3
7664-39-3	Hydrogen fluoride, as F	8.3
7722-84-1	Hydrogen peroxide	5.0
7783-07-5	Hydrogen selenide, as Se	0.7
7783-06-4	Hydrogen sulfide	46.6
123-31-9	Hydroquinone	6.7

CAS #	SUBSTANCE	ASIL MICROGRAMS/M³ TWENTY-FOUR-HOUR AVERAGE
999-61-1	2-Hydroxypropyl acrylate	10.0
95-13-6	Indene	149.9
7440-74-6	Indium, & compounds as In	0.3
7553-56-2	Iodine	3.3
75-47-8	Iodoform	33.3
1309-37-1	Iron oxide fume, Fe203 as Fe	16.7
13463-40-6	Iron pentacarbonyl, as Fe	2.7
---	Iron salts, soluble as Fe	3.3
123-92-2	Isoamyl acetate	1748.3
123-51-3	Isoamyl alcohol	1198.8
110-19-0	Isobutyl acetate	2331.0
78-83-1	Isobutyl alcohol	499.5
26952-21-6	Isocyl alcohol	899.1
78-59-1	Isophorone	83.3
4098-71-9	Isophorone diisocyanate	0.1
109-59-1	Isopropoxyethanol	349.7
108-21-4	Isopropyl acetate	3163.5
67-63-0	Isopropyl alcohol	3263.4
108-20-3	Isopropyl ether	3496.5
4016-14-2	Isopropyl glycidyl ether (IGE)	799.2
75-31-0	Isopropylamine	40.0
768-52-5	N-Isopropylaniline	33.3
463-51-4	Ketene	3.0
3687-31-8	Lead arsenate, as Pb3 (As04)2	0.5
7758-97-6	Lead chromate, as Cr	0.2
68476-85-7	Liquified petroleum gas	5994.0
7580-67-8	Lithium hydride	0.1
1309-48-4	Magnesium oxide fume	33.3
121-75-5	Malathion	33.3
108-31-6	Maleic anhydride	3.3
7439-96-5	Manganese Dust & compounds	16.7
7439-96-5	Manganese Fume	3.3
12079-65-1	Manganese cyclopentadienyl tricarbonyl	0.3
7439-97-6	Mercury, Aryl & inorganic cmpd	0.3
7439-97-6	Mercury, as Hg Alkyl compounds	0.03
7439-97-6	Mercury, vapors except alkyl	0.2
141-79-7	Mesityl oxide	199.8
79-41-4	Methacrylic acid	233.1
16752-77-5	Methomyl	8.3
72-43-5	Methoxychlor	33.3
109-86-4	2-Methoxyethanol	53.3
110-49-6	2-Methoxyethyl acetate	79.9
150-76-5	4-Methoxyphenol	16.7
137-05-3	Methyl 2-cyanoacrylate	26.6
79-20-9	Methyl acetate	2031.3
74-99-7	Methyl acetylene	5494.5
---	Methyl acetylene-propadiene mixture (MAPP)	5994.0
96-33-3	Methyl acrylate	116.6
67-56-1	Methyl alcohol	865.8
100-61-8	N-Methyl aniline	6.7
74-83-9	Methyl bromide	66.6
74-87-3	Methyl chloride	349.7
71-55-6	Methyl chloroform	6327.0
8022-00-2	Methyl demeton	1.7
78-93-3	Methyl ethyl ketone (MEK)	1964.7
1338-23-4	Methyl ethyl ketone peroxide	5.0
107-31-3	Methyl formate	832.5
60-34-4	Methyl hydrazine	1.2
74-88-4	Methyl iodide	33.3
110-12-3	Methyl isoamyl ketone	799.2

CAS #	SUBSTANCE	ASIL MICROGRAMS/M^3 TWENTY-FOUR-HOUR AVERAGE
108-11-2	Methyl isobutyl carbinol	333.0
108-10-1	Methyl isobutyl ketone (MIBK)	682.7
624-83-9	Methyl isocyanate	0.2
563-80-4	Methyl isopropyl ketone	2347.7
74-93-1	Methyl mercaptan	3.3
80-62-6	Methyl methacrylate	1365.3
110-43-0	Methyl n-amyl ketone	782.6
591-78-6	Methyl n-butyl ketone	66.6
298-00-0	Methyl parathion	0.7
107-87-9	Methyl propyl ketone	2331.0
681-84-5	Methyl silicate	20.0
98-83-9	a-Methyl styrene	799.2
126-98-7	Methylacrylonitrile	10.0
109-87-5	Methylal	10323.0
74-89-5	Methylamine	40.0
108-87-2	Methylcyclohexane	5328.0
25639-42-3	Methylcyclohexanol	782.6
583-60-8	o-Methylcyclohexanone	765.9
12108-13-3	Methylcyclopentadienyl manganese tricarbonyl	0.7
5124-30-1	Methylene bis (4-cyclo-hexylisocyanate)	0.2
101-68-8	Methylene bisphenyl isocyanate	0.2
101-77-9	4,4'-Methylene dianiline	2.7
21087-64-9	Metribuzin	16.7
7786-34-7	Mevinphos	0.3
7439-98-7	Molybdenum, as Mo soluble cpds	16.7
7439-98-7	Molybdenum, insoluble cpds	33.3
6923-22-4	Monocrotophos	0.8
110-91-8	Morpholine	233.1
300-76-5	Naled	10.0
91-20-3	Napthalene	166.5
54-11-5	Nicotine	1.7
1929-82-4	Nitrapyrin	33.3
7697-37-2	Nitric acid	16.7
10102-43-9	Nitric oxide	99.9
100-01-6	p-Nitroaniline	10.0
98-95-3	Nitrobenzene	16.7
100-00-5	p-Nitrochlorobenzene	2.0
79-24-3	Nitroethane	1032.3
7783-54-2	Nitrogen trifluoride	99.9
55-63-0	Nitroglycerin	1.7
75-52-5	Nitromethane	832.5
108-03-2	1-Nitropropane	299.7
88-72-2	Nitrotoluene	36.6
111-84-2	Nonane	3496.5
2234-13-1	Octachloronaphthalene	0.3
111-65-9	Octane	4828.5
8012-95-1	Oil mist, mineral	16.7
20816-12-0	Osmium tetroxide, as Os	0.007
144-62-7	Oxalic acid	3.3
7783-41-7	Oxygen difluoride	0.3
8002-74-2	Parafin wax fume	6.7
4685-14-7	Paraquat	0.3
56-38-2	Parathion	0.3
19624-22-7	Pentaborane	0.0
1321-64-8	Pentachloronaphthalene	1.7
87-86-5	Pentachlorophenol	1.7
109-66-0	Pentane	5994.0
594-42-3	Perchloromethyl mercaptan	2.7
7616-94-6	Perchloryl fluoride	46.6
108-95-2	Phenol	63.3

CAS #	SUBSTANCE	ASIL MICROGRAMS/M^3 TWENTY-FOUR-HOUR AVERAGE
92-84-2	Phenothiazine	16.7
101-84-8	Phenyl ether	23.3
122-60-1	Phenyl glycidyl ether	20.0
108-98-5	Phenyl mercaptan	6.7
106-50-3	p-Phenylene diamine	0.3
100-63-0	Phenylhydrazine	66.6
638-21-1	Phenylphosphine	0.8
298-02-2	Phorate	0.2
75-44-5	Phosgene	1.3
7803-51-2	Phosphine	1.3
7664-38-2	Phosphoric acid	3.3
7723-14-0	Phosphorus	0.3
10025-87-3	Phosphorus oxychloride	2.0
10026-13-8	Phosphorus pentachloride	3.3
1314-80-3	Phosphorus pentasulfide	3.3
7719-12-2	Phosphorus trichloride	5.0
85-44-9	Phthalic anhydride	20.0
626-17-5	m-Phthalodinitrile	16.7
1918-02-1	Picloram	33.3
88-89-1	Picric acid	0.3
83-26-1	Pindone	0.3
142-64-3	Piperazine dihydrochloride	16.7
7440-06-4	Platinum, Metal	3.3
7440-06-4	Platinum, Soluble salts as Pt	0.0
1310-58-3	Potassium hydroxide	6.7
107-19-7	Propargyl alcohol	6.7
57-57-8	B-Propiolactone	5.0
114-26-1	Propoxur	1.7
79-09-4	Proprionic acid	99.9
109-60-4	n-Propyl acetate	2797.2
71-23-8	Propyl alcohol	1665.0
627-13-4	n-Propyl nitrate	349.7
78-87-5	Propylene dichloride	1165.5
6423-43-4	Propylene glycol dinitrate	1.0
107-98-2	Propylene glycol mono-methyl ether	1198.8
75-55-8	Propylene imine	16.7
8003-34-7	Pyrethrum	16.7
110-86-1	Pyridine	50.0
106-51-4	Quinone	1.3
108-46-3	Resorcinol	149.9
7440-16-6	Rhodium Metal	3.3
7440-16-6	Rhodium, Insoluble compounds	3.3
7440-16-6	Rhodium, Soluble compounds	0.03
299-84-3	Ronnel	33.3
83-79-4	Rotenone	16.7
---	Rubber solvent (Naphtha)	5328.0
7782-49-2	Selenium compounds, as Se	0.7
7783-79-1	Selenium hexafluoride, as Se	0.7
136-78-7	Sesone	33.3
7803-62-5	Silcon tetrahydride	23.3
7440-22-4	Silver, Metal	0.3
7440-22-4	Silver, soluble compounds Ag	0.03
26628-22-8	Sodium azide	1.0
7631-90-5	Sodium bisulfite	16.7
62-74-8	Sodium fluoroacetate	0.2
1310-73-2	Sodium hydroxide	6.7
7681-57-4	Sodium metabisulfite	16.7
7803-52-3	Stibine	1.7
57-24-9	Strychnine	0.5
100-42-5	Styrene	716.0
1395-21-7	Subtilisins	0.0

CAS #	SUBSTANCE	ASIL MICROGRAMS/M³ TWENTY-FOUR-HOUR AVERAGE
3689-24-5	Sulfotep	0.7
2551-62-4	Sulfur hexafluoride	19980.0
10025-67-9	Sulfur monochloride	20.0
5714-22-7	Sulfur pentafluoride	0.3
7783-60-0	Sulfur tetrafluoride	1.3
7664-93-9	Sulfuric acid	3.3
2699-79-8	Sulfuryl fluoride	66.6
35400-43-2	Sulprofos	3.3
93-76-5	2,4,5-T	33.3
107-49-3	TEPP	0.2
7440-25-7	Tantalum, metal & oxide dusts	16.7
13494-80-9	Tellurium & compounds as Te	0.3
7783-80-4	Tellurium hexafluoride, as Te	0.7
3383-96-8	Temephos	33.3
26140-60-3	Terphenyls	16.7
76-12-0	1,1,2,2-Tetrachloro-1,2-difluoroethane	13886.1
76-11-9	1,1,1,2-Tetrachloro-2,2-difluoroethane	13886.1
79-34-5	1,1,2,2-Tetrachloroethane	23.3
1335-88-2	Tetrachloronaphthalene	6.7
78-00-2	Tetraethyl lead, as Pb	0.3
109-99-9	Tetrahydrofuran	1964.7
175-74-1	Tetramethyl lead, as Pb	0.5
3333-52-6	Tetramethyl succinonitrile	10.0
509-14-8	Tetranitromethane	26.6
7722-88-5	Tetrasodium pyrophosphate	16.7
479-45-8	Tetryl	5.0
7440-28-0	Thallium, soluble compounds, Tl	0.3
96-69-5	4,4-Thiobis(6-tert, butyl-m-cresol)	33.3
68-11-1	Thioglycolic acid	13.3
7719-09-7	Thionyl chloride	16.7
137-26-8	Thiram	16.7
7440-31-5	Tin, Metal	6.7
7440-31-5	Tin, Organic compounds, as Sn	0.3
7440-31-5	Tin, oxide & inorganic except SnH4	6.7
108-88-3	Toluene	1248.8
584-84-9	Toluene-2,4-diisocyanate, (TDI)	0.1
108-44-1	m-Toluidine	30.0
106-49-0	p-Toluidine	30.0
126-73-8	Tributyl phosphate	8.3
76-13-1	1,1,2-Trichloro-1,2,2-trifluorethane	25308.0
76-03-9	Trichloroacetic acid	23.3
120-82-1	1,2,4-Trichlorobenzene	133.2
79-00-5	1,1,2-Trichloroethane	149.9
71-55-6	1,1,1-Trichloroethane	6327.0
75-69-4	Trichlorofluoromethane	18648.0
1321-65-9	Trichloronaphthalene	16.7
96-18-4	1,2,3-Trichloropropane	199.8
121-44-8	Triethylamine	133.2
75-63-8	Trifluorobromomethane	20313.0
552-30-7	Trimellitic anhydride	0.1
2551-13-7	Trimethyl benzene	416.3
121-45-9	Trimethyl phosphite	33.3
75-50-3	Trimethylamine	79.9
118-96-7	2,4,6-Trinitrotoluene	1.7
78-30-8	Triorthocresyl phosphate	0.3
603-34-9	Triphenyl amine	16.7
115-86-6	Triphenyl phosphate	10.0
7440-33-7	Tungsten, Insoluble compounds	16.7
7440-33-7	Tungsten, Soluble compounds	3.3
8006-64-2	Turpentine	1864.8
7440-61-1	Uranium, insoluble & soluble	0.7

CAS #	SUBSTANCE	ASIL MICROGRAMS/M^3 TWENTY-FOUR-HOUR AVERAGE
8032-32-4	VM & P Naphtha	4495.5
110-62-3	n-Valeraldehyde	582.8
1314-62-1	Vanadium, as V205	0.2
108-05-4	Vinyl acetate	99.9
593-60-2	Vinyl bromide	66.6
106-87-6	Vinyl cyclohexene dioxide	199.8
75-35-4	Vinylidene chloride	66.6
25013-15-4	Vinyl toluene	799.2
81-81-2	Warfarin	0.3
---	Welding fumes	16.7
1477-55-0	m-Xylene a,a'-diamine	0.3
1330-20-7	Xylenes (m-,o-,p-isomers)	1448.6
1300-73-8	Xylidine	33.3
7440-65-5	Yttrium, metal and cpds as Y	3.3
7646-85-7	Zinc chloride fume	3.3
13530-65-9	Zinc chromates	0.03
1314-13-2	Zinc oxide, fume	16.7
7440-67-2	Zirconium compounds, as Zr	16.7

EEC Environmental Engineering & Consulting, Inc.

December 3, 1992

(b) (6)

Camas, Washington 98607

Dear Mr. Peterson:

Enclosed is the final addendum to our report on SMI.

It has been a pleasure working with you on this project. Please do not hesitate to call me if there are any questions.

Sincerely,

Patrick H. Wicks, PE, CHMM
President

Enclosures

cc: Mr. (b) (6)
Mr. Jim Trunzo

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